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MIKANIA PARVIFLORA (ASTERACEAE: EUPATORIEAE) AND NEAR RELATIVES

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ABSTRACT

The *Mikania parviflora* complex consists of 17 species characterized by rather large, sessile, ternately disposed capitula and hirsute style appendages and bases. The group is distributed from central Mexico southward through Central America to the southern edge of the Amazon Basin of South America. One species is endemic to Cuba, while another occurs in the Lesser Antilles. A key to species, full descriptions and synonymy, distribution statements, citation of selected specimens, discussion, illustrations of leaves, flower, and heads of each species, and six distribution maps are included.

With few exceptions, in the first 100 years after the genus was proposed by Willdenow in 1803, most publications concerning *Mikania* have been descriptions of new species. From about 1900, while proliferation of new species proposals continued, greater emphasis was placed upon the production of floras for various political and/or geographical areas. These works provided the framework for a basic understanding of the genus that is now known to consist of well over 400 species (Holmes 1995; King & Robinson 1987).

The initial attempts at providing a classification of *Mikania*, the works of de Candolle (1836), Baker (1876), and Robinson and Greenman (1896), have been largely artificial and designed primarily to facilitate identification (Holmes 1996). The cited de Candolle and Baker works also added about 150 names to the genus. More recent attempts at delineating a natural order in *Mikania* were those of Robinson (1922a) and Barroso (1958), both patently artificial, and, in my view, far too superficial to reflect the evolutionary trends apparent in the genus.

Much greater insight into the nature of the genus was expressed by Robinson (1922b, 1934) by his recognition of several difficult groups of closely related species. Included here were the *Mikania scandens* (L.) Willd., *M. globosa* (J. Coult.) J. Coult., and *M. parviflora* (Aubl.) Karst. groups, the latter being arguably the best defined and most easily recognized. Robinson (1922b) described the *M. parviflora* affinity as "a very difficult group of closely related plants with rather large closely sessile ternately disposed heads." He included nine species in his key, but *M. brachiata* Poeppig and Endl. (= *M. guaco* Humb. & Bonpl.) and *M. loretensis* B.L. Rob. (= *M. parviflora* are missing. Both are mentioned in the accompanying work in the same volume (Robinson 1922a) as having capitula "clustered in 3's and 5's at the tips of the ultimate branchlets of the corymbs" and were known to exhibit all characteristics of the group. Their absence appears based upon size of the capitula, which were considered "middle-sized" by Robinson.

Though not afforded official status or mentioned under this name by Robinson (1922b), the name *Mikania parviflora* is used here because it is nomenclaturally the oldest and was used by Robinson as a means of introducing the species group. The group, sometimes referred to as the *M. guaco* group after the most commonly collected, widely distributed, and best known member, is mentioned in various papers discussing clarifications of synonymy and proposals of new species with presumed affinity to the group (e.g., Holmes 1995, 1996; Holmes & McDaniel 1979; King & Robinson 1985, 1987; Pruski 1991).

The purpose of the paper is to provide a taxonomic treatment for one of the best defined species complexes of the genus. This includes a precise description of the group, comments on the origin of the ternate, sessile-capitula condition, discussion of the relationship of members of the group to themselves and to *Mikania* species not in the group, and an explanation of mophological trends evident within the group. The work is based upon study of the extensive *Mikania* holdings in US, though consultation of several type specimens from other herbaria was necessary. These are duly acknowledged and cited within the text in the appropriate places. Visits to G-DC and P conducted over the past several years permitted study of important specimens not otherwise available.

While it is clear that the *Mikania parviflora* group will ultimately be assigned official nomenclatural status, it is inappropriate to do so at this time because of uncertainty as to what taxonomic rank it should be recognized. That must be postponed until *Mikania* as a whole is better understood.

Characteristics of the *Mikania parviflora* group

The basic characteristics of the group include the following: corymbiform capitulescences, capitula disposed in sessile (or shortly pedunculate) ternate clusters, hirsute style appendages and bases, and non-cordate leaf bases. Each will be discussed in turn, first describing the condition, then commenting on origin and relationships. Also included are comments of a more general nature that are important for a better understanding of *Mikania*, hence the group under study.

All members of the group have corymbiform capitulescences thus belong to sec. *Mikania* Willd. sensu Holmes (1996). The capitula are disposed in ternate, sessile (or very shortly pedunculate) clusters with each of the two lateral capitula (of a cluster of three) oriented at an angle of about 30° from the main axis of the medial capitulum. [Rarely is there an additional pair of capitula borne below this cluster.] Occasionally all three capitula are pedunculate, but if so, the peduncles of the lateral (outer) capitula are longer than those of the medial (center) capitulum. More commonly, if capitula are pedunculate, it is the lateral capitula that are pedunculate, while the median one is sessile. The peduncle supporting the cluster of capitula is flattened in the same plane as the lateral capitula are disposed (side-to-side). This shows affinity to the pedunculate capitulated corymbiform group such as *M. scandens* (L.) Willd., *M. cordifolia* (L.f.) Willd., etc., which have a similar structural arrangement (Holmes 1996). The *M. parviflora* group appears derived from that group through reduction or loss of the peduncles of each capitulum. An alternative explanation for the origin of the sessile ternate capitula is that the terminal floral meristem splits/divides into three meristems, thus generating three capitula. This, however, ignores the obvious similarity between the two types of capitulescences described above.

There are a number of other *Mikania* of northwestern South America with ternate sessile capitula (e.g., *M. stuebelii* Hieron., *M. laurifolia* Willd., *M. clematidiflora* B.L. Rob., etc.) that seem to form their own group but are not considered closely related to the group under study. The lateral capitula of these species are disposed at right angles to the medial capitulum and are further distinguished by their spiciform-thyrsoid capitulescences and lack of hirsute style appendages and bases.

Capitulum size is 8–12 (14) mm, which, according to Robinson (1922b) would be medium to large. In the genus, capitula vary in length from about 3 mm (*M. minima* B.L. Rob. of Argentina) to 17-18 mm long (*M. chimborazensis* Hieron. of the cordilleras of Ecuador and Peru).

The capitulum of *Mikania* consists of four florets, four phyllaries, and a subinvolucral bract (sometimes called an exterior bract). The phyllaries are arranged into an inner pair and an outer pair, with both margins of each outer phyllary slightly imbricated over the adjacent inner phyllaries. The

abaxial surfaces of the outer pair of phyllaries tend to be more pubescent than those of the inner pair, which are generally glabrate. The apices are generally pubescent in both the inner and outer phyllaries. The outer phyllaries of a cluster of three capitula are orientated in the same plane as is the flattened surface of the peduncle supporting the cluster (see any included species illustration). The inner phyllaries are oriented 90° to this plane, thus, in a cluster of three capitula, the inner phyllaries of the lateral capitula occupy both the adaxial and abaxial positions while the outer phyllaries occupy more lateral positions. The phyllaries of the medial capitulum have an arrangement parallel to that of the lateral capitula, but because they are located on the primary axis, the inner phyllaries are adaxial and the outer abaxial. The subinvolucral bracts of the lateral capitula are located at the very base of the abaxial (outermost) phyllary (there is no place for them in the adaxial position because of the position of the medial capitulum). Subinvolucral bracts of the medial capitula are borne opposite to the outer phyllary that is more distant from the central axis of the capitulescence or more distal from the center ternate cluster as described below (again there is no room opposite the inner phyllaries because the lateral capitula occupy those positions). The subinvolucral bracts of the medial capitula vary in placement, depending on the species, from the uppermost part of the peduncle, where the three capitula are borne (= at the base of the phyllaries), to anywhere from the base of the phyllaries to the very base of the peduncle that supports a cluster of three capitula. Since the capitulescence branches trichotomously, the ternate clusters occur in threes, the center cluster being accompanied by two outer "sister" clusters, which are oriented 90° to the center cluster. This pattern is repeated throughout the capitulescence. There are certain other *Mikania*, such as *M. hexagonocaulis* W.C. Holmes & McDaniel, *M. stygia* B.L. Rob., *M. steyermarkii* King & Rob., and *M. chaetoloba* Pruski with a similar arrangement of capitula and subinvolucral bracts, but these can be distinguished from the *M. parviflora* affinity by the absolute lack of hirsute style appendages and bases, thus they are not considered part of the group.

Phyllaries are normally oblong to elliptic-ovate but otherwise bear no particular distinguishing features/characteristics, except for *Mikania iserniana*, which has very wide phyllaries (ca. 3 mm) for their length. Phyllaries of the other members of the group are 2 mm or less wide.

Based upon spread of the throat and the amount of cutting of the corolla teeth into the throat, the corollas of the *Mikania parviflora* group are of three types. [Illustrations of corolla teeth are in individual species treatments.]

a. Tubular to cylindric corollas, generally with a long corolla throat compared to the tube length and deltate teeth usually less than one-fourth the length of the throat. This is typical of *Mikania parviflora*, *M. neei*, and *M. guaco*. *Mikania dictyophylla* and *M. tafallana* both have this type of corolla, but with slightly longer corolla teeth.

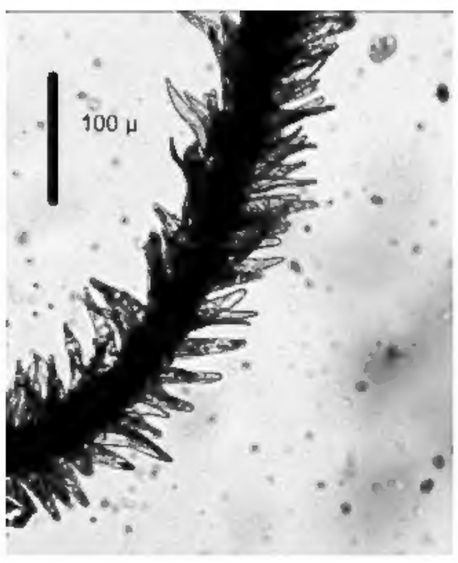
b. Funnelform to narrowly campanulate corollas with the teeth being about the same length as the length of the throat. This condition occurs in *Mikania cuatrecasasii*, *M. holmesiana*, and *M. iserniana*.

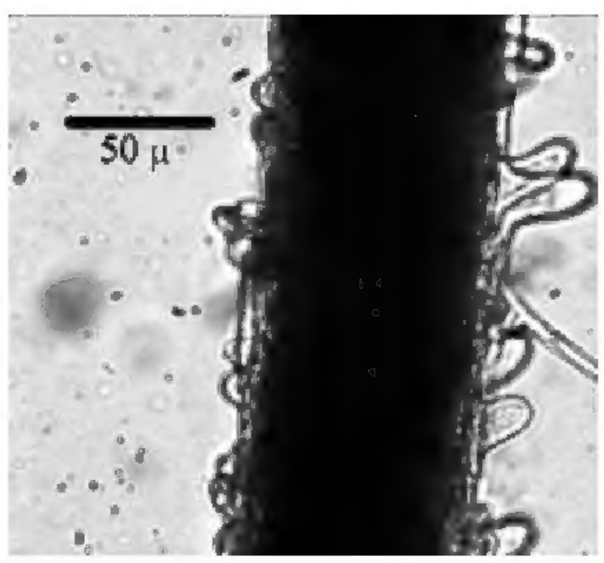
c. Corollas with broadly expanded throats with the teeth cut deeply into the throat so that the length of the teeth exceeds that of the throat. This is typical of the remaining species of the group (*Mikania hensoldiana*, *M. speciosa* , *M. trimeria*, *M. allartii* , *M. vaupesensis*, *M. boomii*, *M. latifolia*, *M. oopetala*, *and M. trinitaria*).

Funnelform to narrowly campanulate corolla throats with the teeth being about the same length as the throat appears to be the most common condition in *Mikania* with corymbiform capitulescences. This indicates that there are two trends in the corollas of the group—to very short corolla teeth and to very long corolla teeth. Other *Mikania* mentioned as natural groups (e.g., *M. banisteriae* DC., *M. scandens* (L.) Willd., *M. lindleyana* DC., *M. swartziana* Griseb., etc.) have more

uniform cutting of the corolla teeth into the throat among the various species. In *Mikania* each corolla tooth has two veins with the normal condition being one vein located on each margin. A rare condition is for the veins to be borne inward from but parallel to the margins, such as in *M. anisidora* Hassler, *M. lindleyana* DC., *M. holwayana* B.L. Rob., *M. salviaefolia* Gardner, and several others. Without exception, corollas of these species have broadly expanded throats that are much shorter than the teeth. This position of the nerves imparts a "double nerved" appearance to each margin of the corolla teeth and seems caused by proliferation of additional tissue on the distal side of the nerve. In effect, this makes each tooth wider, thus creating a more expanded throat. This syndrome seems particularly well-developed in the species of the *M. parviflora* group that have corollas of type three described above. It may be difficult to discern in poorly preserved materials or in immature corollas. Often it is more pronounced near the base of the teeth and is best detected by use of a wetting agent and 10–30 × magnification.

Hirsute style appendages and bases are considered to be the signature trait of the group (Figs. 1, 2). The trichomes of the style appendages are unicellular, 80–120 μ long, rather dense, and antrorsely disposed. This trait is best developed in *Mikania parviflora* and *M. guaco*, but even in these two species there is a considerable range of expression. Presumably the function of the hirsute style appendages is to increase the efficiency in which the pollen is pushed from the anther tube. Other functions may include increased ability to retain pollen among the trichomes, thus increasing proficiency of self-pollination, should this occur, or for adherence to objects such as insect legs to increase the length of a visit, or adherence to other stigmas, pappus, etc. to limit curving of the stigmas, hence preventing selfing. This trait is unusual in *Mikania*, but has been noted in other species (e.g., *M. alvimii* R.M. King and H. Rob. and *M. populifolia* Gardner). The lower 1–2 mm of the style bases are also hirsute, but the trichomes are shorter and less dense than those of the appendages, possibly reflecting a vestigial condition.





In the twining *Mikania* with corymbiform capitulescences, there is a tendency toward cordate leaf bases and palmate or trinervate venation. For example, 17 of the 24 *Mikania* that are twining and have corymbiform capitulescences treated in Barroso (1958) exhibit both of these traits. The leaves of the *M. parviflora* group are ecordate and not trinervate or palmately nerved, with the exception of *M. latifolia*, which has leaf bases that may be subcordate to shallowly cordate.

There are several trends apparent in leaf morphology. Species with narrow (lanceolate) leaves tend toward pinnate venation with the secondary nerves being more or less evenly disposed over the entire length of the blade. The leaf bases are normally acute. Ovate-leaved species tend toward subpinnate venation with 2–3 pairs of secondary nerves originating within the basal portion of the blade. The bases are normally truncate to obtuse to shortly cuneate. More rotund leaved species have subpinnate venation with the secondary nerves originating within the basal one-fourth of the blade, but tend to have bases that are cuneately decurrent upon the petioles. Leaf apices in all species are mostly acute to acuminate to shortly caudate. Margins in most species are entire but are finely denticulate in *Mikania allartii* and coarsely dentate in *M. hensoldiana*. Though not morphological, it has been observed that occasional specimens of the various species may have purplish coloration, particularly on the ventral surface. This appears related to environmental conditions, such as shading.

Interpetiolar nodal discs, or stipuliform appeandages, which seem to attain their best develoment within the corymbiform-capitulescenced *Mikania*, are lacking or poorly developed in the group. Items not discussed, such as pappi, cypselae, etc., did not appear relevant to the study.

Distribution

The general distribution of the *Mikania parviflora* group is from southern Mexico throughout Central America to the Amazon Basin of Peru, Bolivia and Brazil, and the West Indies (Figure 3). This is basically the distribution of the most common member of the group, *M. guaco,* but with the exclusion of the West Indies and with the addition of outliers in eastern Brazil and Paraguay. Other widespread species include *M. parviflora*, which is known from southern Panama southward throughout northern South America to Peru, Bolivia, and Brazil, and *M. trinitaria* which occurs in northern South America from Colombia, northern Amazonan Brazil to the Guianas, Trinidad, and several of the Lesser Antilles. One species, *M. oopetala*, is endemic to Cuba, while another, *M. latifolia*, is endemic to various islands of the Lesser Antilles. The remaining species have very restricted distributions with most being concentrated in northwestern South America. *Mikania allartii*, *M. trimeria*, and *M. hensoldiana* are known only from the type, while *M. dictyophylla*, *M. holmesiana*, *M. iserniana*, *M. tafallana*, *M. boomii, M. cuatrecasasii,* and *M. vaupesensis* are known from the types and one to several additional specimens of each species. The exceptions to the latter distributions are *M. neei*, known only from the type, which occurs in southern Mexico, and *M. speciosa*, which occurs on the eastern slopes of the Andes of Bolivia, Ecuador, and Peru. The group is conspicuously absent from the major concentration of *Mikania* species, eastern and southeastern Brazil (but see *M. guaco*). Specific information about individual distribution is treated under each species.

Relationships of the *Mikania parviflora* group

It has been mentioned that the *Mikania parviflora* group is thought to be derived from the pedunculate capitulated corymbiform *Mikania*, as represented by *M. scandens*, *M. cordifolia*, etc. While it appears that the corymbiform *Mikania* form a natural group, it is not known at what rank the group should be recognized. The *M. parviflora* group is here considered to be a subset of the corymbiform *Mikania*. At this time it is not possible to subdivide the *M. parviflora* group into subgroups. It would seem natural to use the highly variable amount of cutting of the corolla teeth into the throat (i.e., length of corolla teeth) as a basis for this purpose. Unfortunately, while this trait is very useful for specific delimitation, it appears useless for determining relationships between species. Basically, there appears to be massive instability within this trait in the various members of the *M. parviflora* group. Instability in *Mikania* corollas has been mentioned by Holmes (1995), King and Robinson (1987), and others. Other recognized affinities (*M. banisteriae*, *M. swartziana*, *M. scandens*, *M. lindleyana*, etc., all named after the oldest named member) have corollas exhibiting

unfaltering stability. In these groups, the corolla may be used to define the group but is not serviceable for delimiting species.

The key presented below uses corolla characters for distinguishing species but does not reflect phylogeny.

Taxonomic treatment of the *Mikania parviflora* group

Vines. Stems terete to hexagonal. **Leaves** opposite (or whorled in one species), subpinnate to pinnate (very rarely trinervate or palmate), bases cuneate-decurrent, cuneate, to truncate (subcordate to shallowly cordate in one species), interpetiolar discs poorly developed or lacking. **Capitulescence** corymbiform. **Capitula** sessile or nearly so to occasionally pedunculate, disposed in clusters of threes. **Pappus bristles** capillary. **Style appendages and bases** hirsute.

In the treatments of species only one specimen per country is cited if the species is widely distributed. All specimens examined are listed for those species known from few collections.

KEY TO THE SPECIES

1. Corolla teeth shorter than the length of the throat (2).
1. Corolla teeth longer than or equal to the length of throat (6).

2. Leaves elliptic-ovate, oblong-ovate, to ovate, upper surfaces smooth; subinvolucral bracts oblanceolate to obovate to spatulate-elliptic, one-half to nearly as long as the phyllaries (3).
2. Leaves ovate-rotund, upper surfaces asperous to scabrid; subinvolucral bracts subulate to linear to linear-lanceolate, less than one-half the length of the phyllaries (4).

3. Leaves lance-ovate, pinnate with the secondary nerves evenly disposed over the entire length of the blade..... **M. neei**
3. Leaves ovate to elliptic-ovate to oblong-ovate, subpinnate with the seconday nerves originating within the basal one-fourth of the blade ..... **M. parviflora**

4. Leaf bases prominently cuneate-decurrent upon the petioles; capitula 8–10 mm long, corolla teeth deltate, never more than 1 mm long (usually 0.5–0.6 mm long) ..... **M. guaco**
4. Leaf blades rounded to shortly cuneate at insertion of the petioles, capitula 12–14 mm long, corolla teeth lanceolate to triangular, 1–1.5 mm long (5).

5. Leaf undersurfaces densely tomentellose ..... **M. dictyophylla**
5. Leaf undersurfaces glabrate to puberulent mainly on the nerves and veins ..... **M. tafallana**

6. Leaf bases conspicuously long cuneate-decurent upon the petioles (7).
6. Leaf bases acute to rounded or at most shortly cuneate upon the petioles (8).

7. Corolla teeth linear-lanceolate, ca. 3 mm long, corolla throat very short, apparently lacking ..... **M. hensoldiana**
7. Corolla teeth oblong ca. 1.5 mm long, about twice the length of the throat ..... **M. speciosa**

8. Corolla teeth about same length as the throat (9).
8. Corolla teeth 1.5—5× the length of the throat (11).

9. Plants densely crisped pubescent to densely villous ..... **M. holmesiana**
9. Plants glabrate to glabrous (10).

10. Phyllaries ca. 2 mm wide; leaves narrowly elliptic to elliptic-ovate ..... **M. cuatrecasasii**
10. Phyllaries ca. 3 mm wide; leaves lance-ovate to rotund ..... **M. iserniana**

11. Nerves of corolla teeth borne at the margins (12).
11. Nerves of corolla teeth borne inward (submarginal) but parallel to the margins (13).

12. Leaves whorled (3 at a node), about 1 cm wide ..... **M. trimeria**
12. Leaves opposite, much greater than 1 cm wide (14).

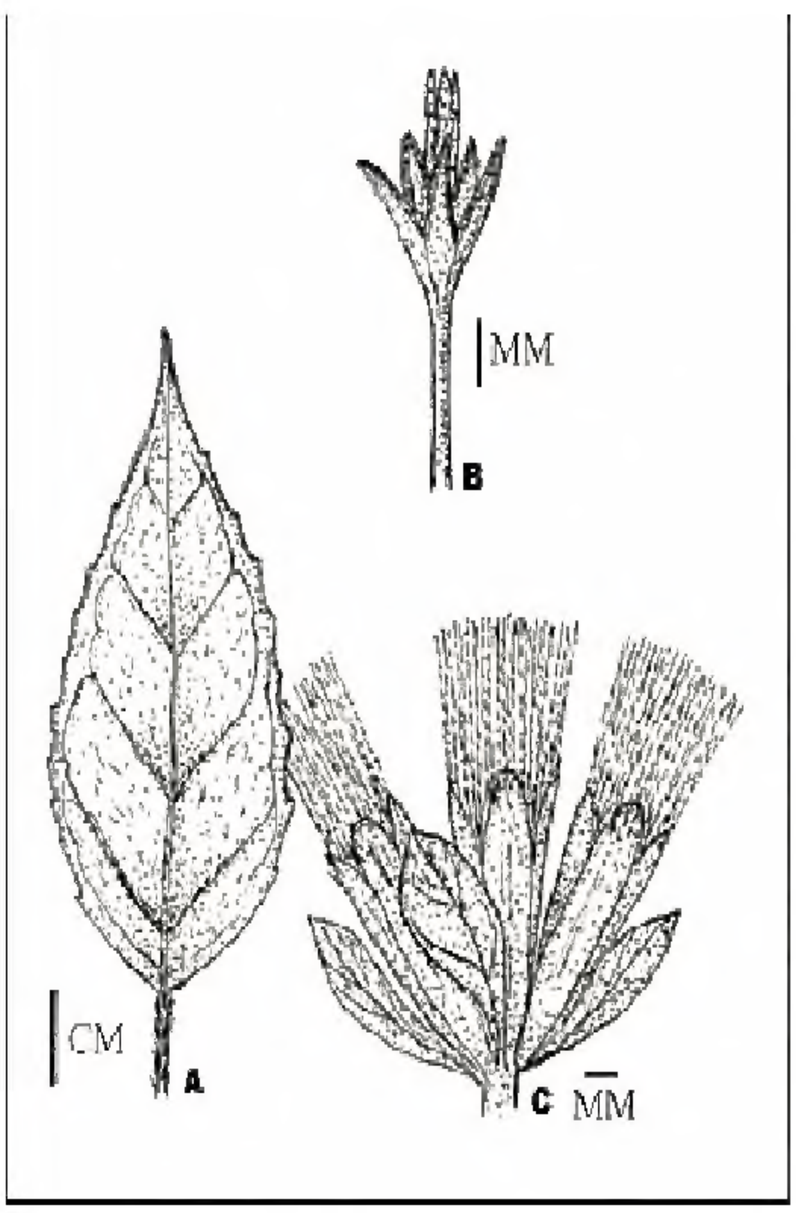
13. Leaf margins denticultate, surfaces setose-hispid ..... **M. allartii**
13. Leaf margins entire, upper surfaces glabrate, the lower at most puberulent ..... **M. vaupesensis**

14. Leaves elliptic, 4 cm or less long ..... **M. boomii**
14. Leaves ovate to broadly ovate, greater than 5 cm long (15).

15. Leaf bases mostly subcordate to shallowly cordate; stems terete ..... **M. latifolia**
15. Leaf bases rounded; stems hexagonal or subhexagona (16).

16. Subinvolucral bracts linear, ca. 0.7 mm long ..... **M. oopetala**
16. Subinvolucral bracts ovate-lanceolate, 2 mm long or longer ..... **M. trinitaria**

1. ***MIKANIA ALLARTII*** B.L. Rob., Contr. Gray Herb. 96. 23. 1931. **TYPE**: **Venezuela**. Los Venados near Caracas, Oct 1924, *Allart 112* (holotype: US!; isotype: VEN). Figure 4.

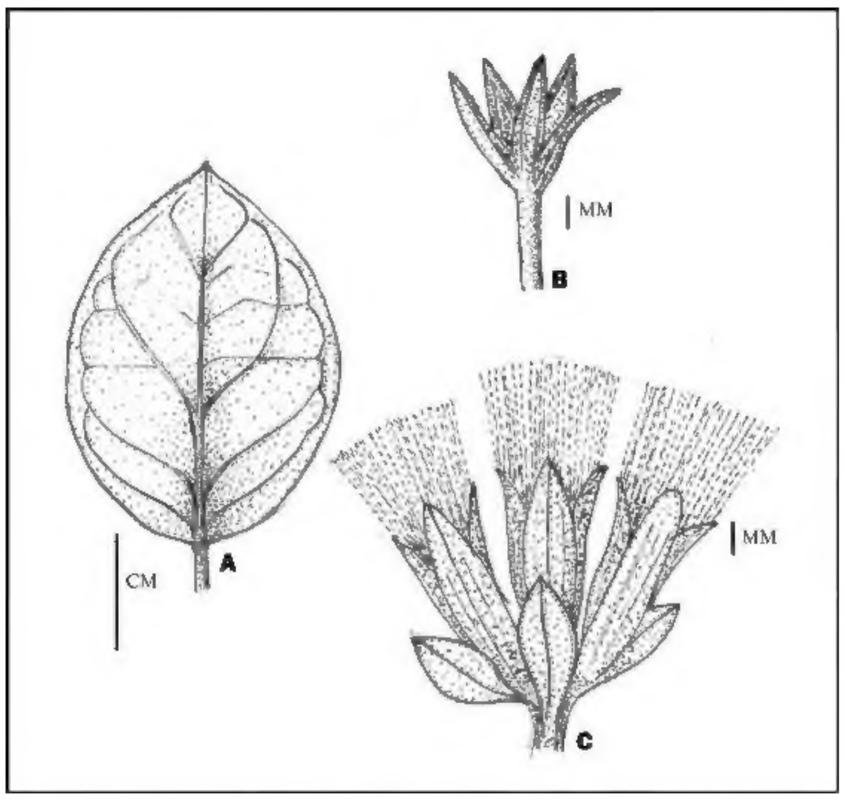


Stems terete, glabrate, striate, solid, younger parts glabrate to hispid to setose-hispid, striate, internodes 4–16 cm long. Leaves lance-ovate to ovate, 5.3–8.0 × 1.9–3.0 cm; apices acuminate, margins denticulate, the teeth 2–5 mm distant, bases obtuse, surfaces pinnately nerved, upper surfaces setose-hispid, the nerves and veins obscured, lower surfaces densely setose-hispid, glandular, nerves and veins prominent, exserted from the surface, densely setose-hispid; petioles 6–10 mm long, densely setose hispid. Capitulescence ca. 13 × 8 cm; branchlets setose-hispid; bracts similar to leaves but reduced in size. Capitula 12–14 mm long; subinvolucral bracts ovate to obovate, 5–8 mm long, apices acute-acuminate, margins entire, bases narrowed and somewhat petiolate in appearance, surfaces setose-hispid, glandular, positioned at the very base of the phyllaries for both lateral and medial capitula. Phyllaries narrowly oblong, 8–9 mm long, the outer setose-hispid, glandular, apices rounded, densely setose hispid, the inner glabrate except for few scattered globular glands, the apices rounded, setose-hispid. Corollas ca. 6 mm long, tubes 3–3.5 mm long, the bases not noticeably enlarged; throats funnelform, ca. 0.8 mm long, teeth lanceolate, ca. 1.6 mm long, glandular, veins marginal. Pappus bristles rufous in age, 36–42, 6–6.5 mm long, margins scabrid. Cypselae ca. 4.8 mm long, glabrate, glandular, particularly at the summit.

Distribution and phenology. Known only from the type collected in Venezuela; flowering in October.

Mikania allartii is distinctly marked by its leaves that have denticulate margins, pinnate venation, and densely pubescent undersurfaces. Of note are the subinvolucral bracts that are quite large (more than one-half to nearly as large as the phyllaries), with those of the medial capitula always borne at the very base of the involucre.

2. ***MIKANIA BOOMII*** Pruski, Mem. N.Y. Bot. Gard. 64: 44. 1990. **TYPE**: **Guyana**. Upper Potaro River Region: Summit ofunt Wokomung, 5° 05' N, 59° 50' W, 1650 m, 2 Jul 1989, *Boom & Samuels 9040* (holotype: NY; isotype: US!). Figure 5.



Stems subterete to slightly angled, pubescent when young, densely tuberculate in age; internodes 1.5–5 cm long. Leaves coriaceous (fleshy?), elliptic to broadly elliptic, 1.7–3.9 cm × 1–1.9 cm, apices acute to obtuse, margins entire to occasionally remotely denticulate, revolute, bases cuneate to rounded, pinnately veined with about 3 pairs of secondary veins originating within the basal half of the blade, upper surfaces rugose, shiny, glabrate, lower surfaces pubescent, densely glandular, strongly reticulate with veins flattened in a vertical plane (suggesting a fleshy nature); petioles stout, 2–3.5 mm long, pubescent. Capitulescence 3–4 cm tall and 3–7 cm broad; the capitula sessile or occasionally borne on peduncles 0.5–3 mm long, this more common on the lateral capitula. Capitula 9–11.5 mm long; subinvolucral bracts obovate, 3.5–5 mm long, apices acute to obtuse, those of the lateral pair of capitula borne at the very base of the involucre, those of the medial capitula borne at or slightly below the point of origination of the outer capitula or (if present) peduncles of the outer pair of capitula. Phyllaries elliptic-obovate, 8–9 mm long, apices rounded to slightly acute, puberulent, surfaces of the outer pair somewhat pubescent and glandular, surfaces of the inner pair glabrate except for the apices. Corollas 6.5–7 mm long, white, tubes ca. 3 mm long, throats broadly campanulate, ca. 0.6 mm long, teeth linear, ca. 3 mm long, apices slightly puberulent and glandular, the veins borne inward and parallel to the margins thus imparting a "double nerved" appearance. Pappus bristles white, 60–65, 7.5–8.5 mm long, margins scabrid, apices not thickened. Cypselae obconic, 5.2–5.8 mm long, brownish, glabrous.

Distribution and phenology. Known only from Guyana; 1650–2000 m elevation; flowering June–November.

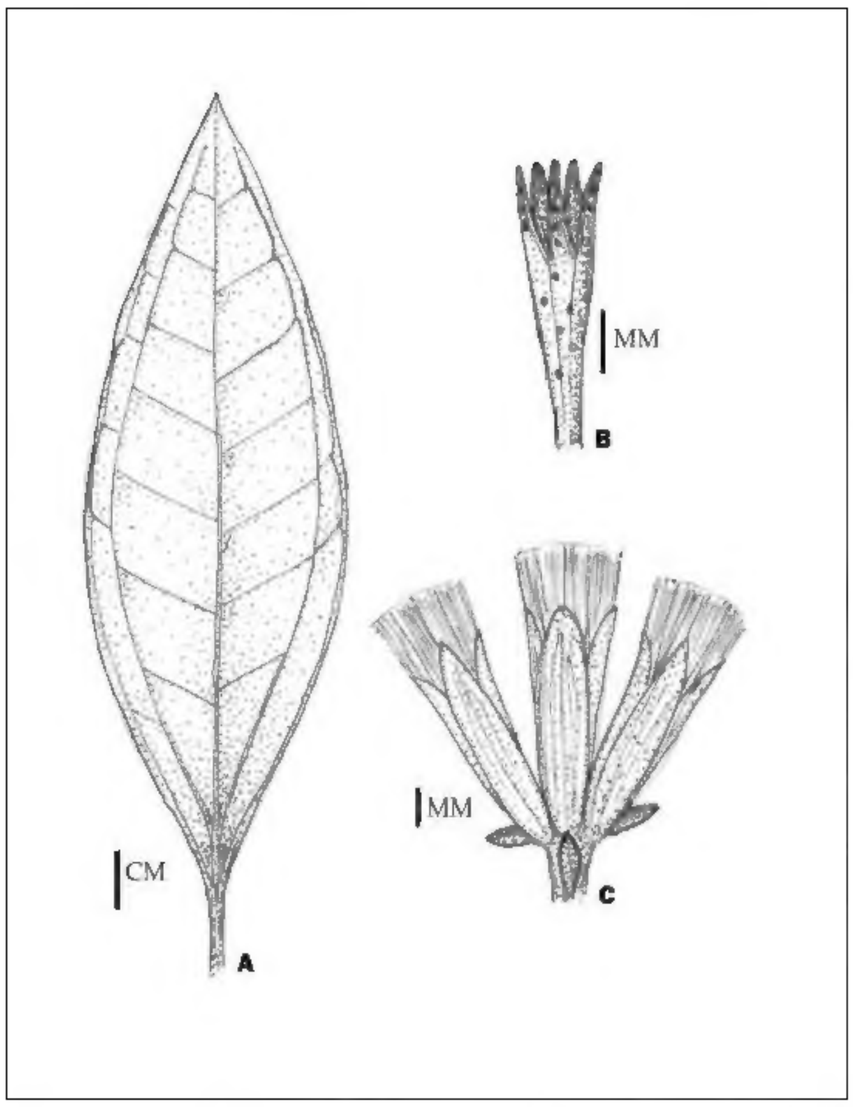
Additional specimens. **Guyana**. Cuyuni-Mazaruni. Pakaraima Mts, 2 km transect along summit-ridge, Mt. Ayanganna, N 5° 23', W 59° 59', 1800–2000 m, 3 Nov 1992, *Henkel 128 & Hoffman* (US); Potaro-Siparuni, Mt. Ayanganna, N 5° 23'12", W 59° 59' 36", 19 Jun 2001, *Clark 9381, Williams, Perry, & Kelly* (US).

The revolute margins and veins flattened in a vertical plane (both in the dried state) suggest that the leaves may possess a fleshy nature. Leaves are also uniformly elliptic in shape, small in size for the group, with none exceeding 4 cm in length on the three specimens from which this species is known. Leaves also have short petioles compared to the size of the blades. Additionally, the lower surfaces of the leaves are densely glandular and the margins may occasionally be remotely

denticulate. It is important to note that *Mikania* specimens most often consist of the capitulescence and nearby leaves, rarely do they include cauline leaves or other structures from lower portions of the plant. My experience has been that lower cauline leaves often differ greatly from the upper leaves in size, shape, basal lobing, and other characteristics (see Holmes 1995 for additional information.

Pruski (1990) reported the lack of a subinvolucral bract for the medial capitulum of the sessile clusters of three, but, as mentioned in the description above, they are borne at or slightly below the point of origin of the lateral capitula or their peduncles.

3. **MIKANIA CUATRECASASII** W.C. Holmes, Phytologia 65: 242. 1988. **TYPE**: **Colombia**. Del Valle, Costa del Pacifico, Río Yurumangui, El Papayo, 10–100 m, 5 Feb 1944, *Cuatrecasas 15995* (holotype: F!; isotypes: COL!, F!, US!). Figure 6.



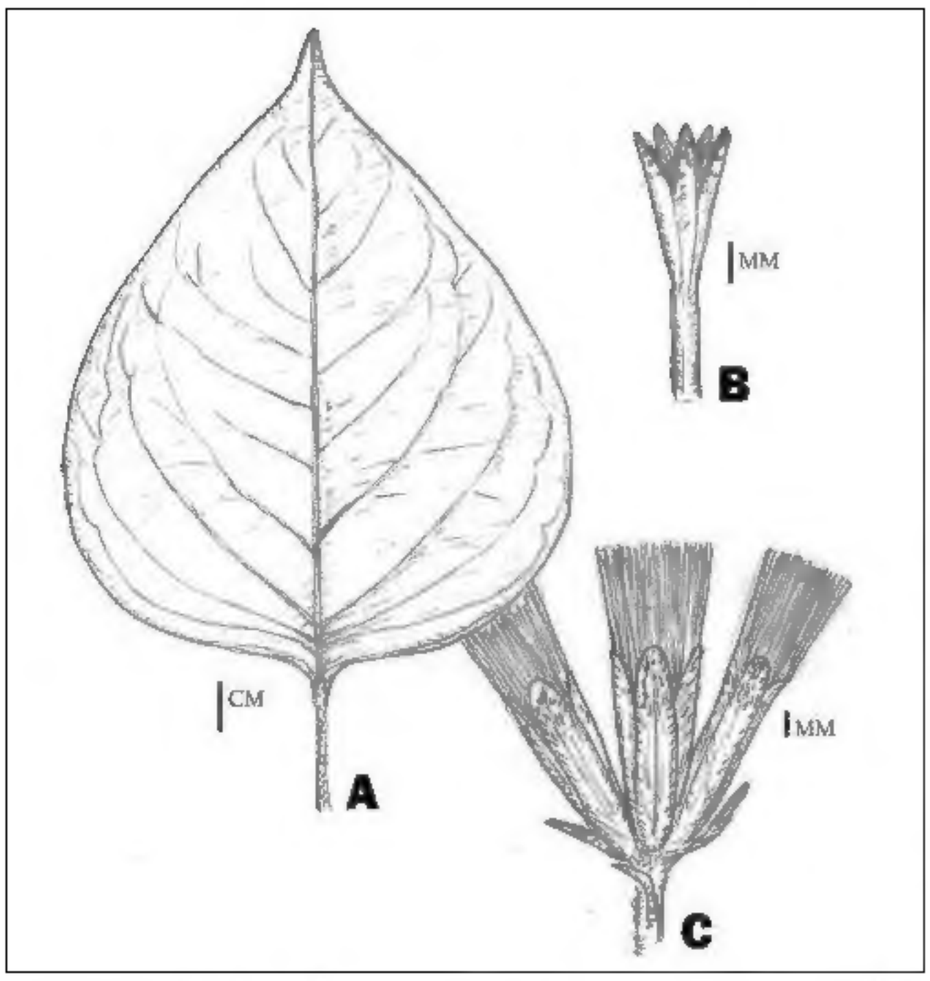
Stems terete, costate-striate, glabrate, pithy; internodes 6–23 cm long. Leaves narrowly elliptic to elliptic-ovate, 10–17 × 2.7–5 cm, subpinnately 5-nervate, the first pair of nerves rather obscure, originating at the very base of the blade, arching forward and somewhat paralleling the margins to about the upper one-third of the blade, the second pair originating with 1.5–2 cm of the base, more conspicuous than the first, imparting a trinervate appearance, arching forward parallel to the margins and extending nearly to the apex, the tertiary veinlets somewhat prominent, slightly antrorse disposed and forming a fairly prominent transverse pattern between the midrib and secondary nerves; apices acute to acuminate, margins entire, bases attenuate; surfaces glabrous; petioles 1–1.5 cm long, glabrous. Capitulescence 7–10 × 8–11 cm; branchlets striate, glabrate to puberulent; bracts narrowly elliptic, 1–2 cm long, petiolate, otherwise similar to leaves. Capitula 7–8 cm long; subinvolucral bracts ovate, 1–1.5 mm long, glabrous, apices acute, those of the outer pair of heads borne at the very base of the peduncle, those of the median capitulum borne 1–2 mm below the involucre. Phyllaries oblong-elliptic, ca. 7.2 mm long, apices rounded, hispid, bases slightly swollen, the outer puberulent, glandular, the inner glabrous. Corollas white, 4.3–4.7 mm long, sparingly glandular; tubes 1.7–2 mm long; throats tubular, 1–1.5 mm long; teeth lanceolate, 1–1.3 mm long, glandular. Pappus bristles white, 35–40, ca. 5 mm long, margins obscurely scabrid (visible at 30×). Cypselae (immature) ca. 1.5 mm long, densely glandular at the very summit.

Distribution and phenology. Known only from Del Valle and Chocó, Colombia; lower Pacific slopes from 10–100 m; flowering February to April.

Additional specimen: **Colombia**. **Chocó**. Carretera Quibdó-Guayabal, Duata, margen derecha de Río Duata, 40 m, 27 Apr 1975, *Forero, Jaramillo, & McElroy 1261* (COL).

The narrow elliptic to elliptic-ovate leaves with the major nerves originating within the basal 2 cm of the blade and the slightly antrorse disposed transverse pattern of the tertiary veinlets between the midrib and secondary nerves characterize the species. Other notable traits of this species are its glabrate stems and leaves and the corolla teeth that are about the same length as the throat.

4. **MIKANIA DICTYOPHYLLA** B.L. Rob., Contr. Gray Herb. 64: 8. 1922. **TYPE**: **Colombia**. **Huila**. On Cordillera Oriental E of Neiva, 1300-1800 m, 1–8 Aug 1917, *Rusby & Pennell 1004* (holotype: NY; phototype: US!). Figure 7.



Stems dark purple to brownish, terete, fistulose, glabrate to scabrid. Leaves thickish, firm, lance-ovate to ovate, 2.3–9.5 × 7–17 cm; apices acute to acuminate, margins entire, bases rounded to a short acumination at insertion of the petiole, subpinnately nerved with 2–4 pairs of secondary nerves originating within the basal 2–4 cm of the blade; upper surfaces scabrid and rugose, lower surfaces tomentellose, prominently reticulate, the veinlets exserted from the surface; petioles 1.2–3.4 cm long, tomentellose. Capitulescence 5–10 cm tall and 7–16 cm wide; capitula 12–14 mm long; subinvolucral bracts linear to lanceolate, 2.5–3.5 mm long, glabrate to puberulent, those of the outer pair of capitula borne at the very base of the involucre, those of the center capitula borne 1–4 mm below the involucre. Phyllaries oblong, ca. 8 mm long, apices rounded, puberulent, the outer pair puberulent, the inner glabrate. Corollas white, ca. 7 mm long, glandular, tubes 3–4 mm long, gradually expanded into the funnelform throat, ca. 3 mm long, teeth triangular, 1–1.5 mm long, the nerves marginal. Pappus bristles white, 60–70, ca. 8 mm long, margins scabrid, apices sometimes thickened. Cypselae 4–5 mm long, glabrate, glandular at the summit.

Distribution and phenology. Known only from Colombia; 1300–1800 m elevation; flowering all year (?).

Additional specimens: **Colombia**. **Antioquia**. San Antonio, Dec 1937, *Daniel 2236* (US); Valle, Mpio. Bolivar, Alto de los Viejos, finca El Porvenir, via Primavera-Trujillo, 1650 m, 27 Feb 1985, *Devia A. 995* (US); Mariquita, 1854, *Triana 1243* (P).

In overall appearance, this species is similar to *Mikania guaco*, but Robinson (1922) remarked that it differs in its more thicker and more reticulated leaves with a general lack of prominent cuneate-decurrent leaf bases, although a photo of the holotype shows the upper leaves to be amply decurrent upon the petioles. While cuneate–decurrent leaf bases are characteristic of *M. guaco*, the condition varies greatly as to expression and is not present on all specimens of the species. More reliable traits distinguishing the two species are the shape and length of corolla teeth, with those of *M. dictyophylla* being longer and narrower, as mentioned in the key to species. Even more similar is the Ecuadorian *M. tafallana*, which has corolla teeth closely approaching the size and shape of *M. dictyophylla*. Ample distinction, based upon leaf characteristics, is presented in the key to species. There are other differences in the corollas. In *M. tafallana*, the throat is about 2× the length of the tube while in *M. dictyophylla* the throat and tube are nearly equal in length. While the mentioned traits seem to adequately distinguish the two species, it is important to note that both species are known from very few specimens (three for *M. tafallana* and four for *M. dictyophylla*) that probably do not express the total range of variation present in either species. While the differences in corollas seem a more precise character, experience has proven it to be a difficult character to discern and, depending upon the developmental state of the corolla, often misleading.

Mikania dictyophylla is characterized by the purple-brownish color of stems and leaves and capitula 12–14 mm long. Flower color of the type was reported as cream-yellow by Rusby and Pennell, which may be attributed to age and or the presence of pollen.

5. **MIKANIA GUACO** Humb. & Bonpl., Pl. Aequinoct 2: 84. t. 105. 1810-11. *Mikania amara* Willd. var. *guaco* (Humb. & Bonpl.) Baker in Mart. Fl. Bras. 6(2): 237. 1876. *Willoughbya guaco* (Humb. & Bonpl.) Kuntze, Rev. Gen. 1: 372. 1891. **TYPE: Colombia**. Magdalena River between Mahates & Angostura, *Humboldt & Bonpland 1447* (holotype: P). Figure 8.

Mikania huaco Rieux ex Spreng, Syst. Veg. Fl. Peruv. Chil 3: 422. 1826, nom. nud.

Mikania aspera Miq., Linnaea 17: 68. 1843. **TYPE**: *Focke 209* (holotype: U?; phototype: P!).

Mikania argyrostigma Miq., Linnaea 17: 69. 1843. **TYPE**: *Focke 460* (holotype: U; phototype: P!).

Mikania brachiata Poepp. in Poepp. & Endl., Nov. Gen. Sp. Pl. 3: 53. 1845. **TYPE: Peru**. In forests at Tocache, *Poeppig 2041* (holotype: W; isotype F! photo and fragment).

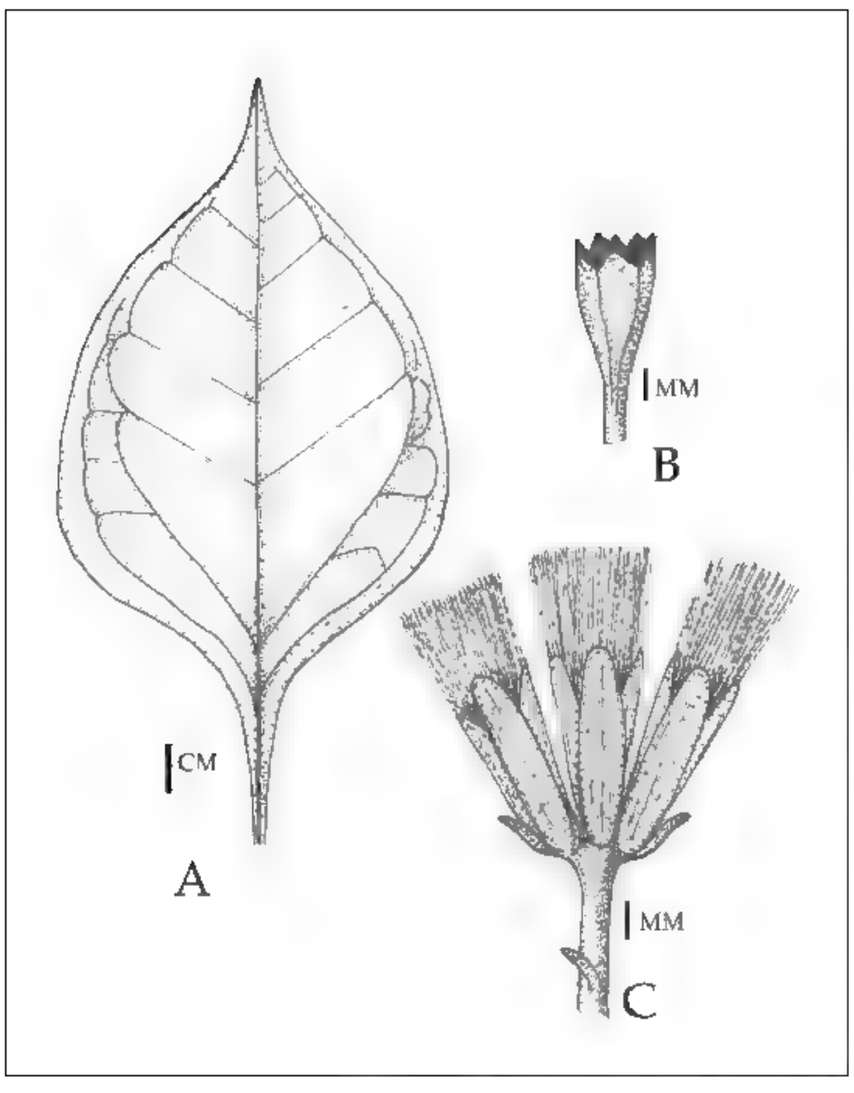
Mikania cuneata Schultz-Bip., Bonplandia 4: 54. 1856 (nomen nudum). **TYPE: Peru**. San Govan, *Lechler 2477* (holotype: K?; isotype: F!).

Mikania olivacea Klatt in Th. Dur. & Pittier, Bull Soc. Roy. Bot. Belg. 31: 195. 1892. **TYPE: Costa Rica**. Forests of Buenos Aires, *Pittier 4433* (holotype: BR!; isotype: GH!).

Mikania archidonensis Cuatrec., Anal. Univ. Madrid 4: 234. 1935. **TYPE: Ecuador**. Archidona, Apr-May 1865, *Isern 72* (holotype: MA; isotype: F, phototype: US!).

Mikania napensis Blake, J. Wash. Acad. Sci. 28: 484. 1938. **TYPE: Ecuador**. Near Archidona, 650 m, 19 Apr 1935, *Mexia 7259* (holotype: US!).

Mikania zonensis King & H. Rob., Phytologia 28: 275–276. 1974. **TYPE: Panama**. Canal Zone. Albrook, U.S. Army Tropic Test Center Site, Apr 1965, *Dwyer & Robyns 115* (holotype: MO!; isotype: US!) [See comments on type in discussion.]



Stems terete, pithy to hollow, glabrous to puberulent to pilose and glandular (especially the younger); internodes to 20 cm or more long. Leaves blades ovate-oval, 10–20 × 4–12 cm or greater, margins entire to obscurely denticulate, apices acuminate, bases normally very prominently decurrent upon the petiole, occasionally shortly so, upper surfaces puberulent to more often scabrid, pinnately nerved with 2–3 pairs of more prominent secondary nerves originating in the basal one-fifth of the blade, lower surfaces glabrate to puberulent, glandular; petioles 2.5–5 cm long, thin, puberulent. Capitulescence rather dense, to 6–12 cm, branchlets angled, puberulent. Capitula 8–10 mm long, sessile or occasionally shortly pedunculate, especially the outer pair of capitula. Subinvolucral bracts subulate to linear, 0.5–2 mm long, puberulent, those of the outer capitula borne at the very base of the phyllaries, those of the medial capitula usually borne about midway down the peduncle that supports the three capitula. Phyllaries oblong, 4–6 mm long, the outer puberulent, glandular, apices rounded densely puberulent, the inner glabrate, except for the puberulent rounded apices. Corollas 5–6 mm long, white to lilac to brownish, glandular, tubes 2–3.5 mm long, throats ca. 2–2.4 mm long, teeth deltate, 0.5–0.6 mm long. Pappus bristles ca. 60, white (to buff in age), ca. 4–6 mm long, scabrid, slightly thinning toward the apices. Cypselae ca. 3 mm long, blackish, glabrate to puberulent.

Distribution and phenology Southeastern Mexico (east of about 96°) south to the Amazon Basin of South America (Brazil, Bolivia, and Peru), also Rio de Janeiro, Brazil and northeastern Paraguay, to about 1750 m, but generally below 500m, flowering all year Figure 9

Representative specimens CENTRAL AMERICA **Belize** Jacinto Creek, 6 Mar 1934, *Schipp S-739* (US) **Costa Rica** San José Vicinity of El General, Jan 1936, *Skutch 2363* (US) **Guatamala** Izabal, between Virginia and Lago Izabal,Montaña del Mico, 4 Apr 1940, *Steyermark 38778* (F) **Honduras** Atlántida, vicinity of Tela, 14 Dec-15 Mar 1928, *Standley 54769* (US) **Panama** San Jose Island, Perlas Archipelago, Gulf of Panama, ca 55 mi SSE of Balboa, 13 Feb 1946, *Johnston 1372* (US) **Nicaragua** Matagalpa, Cerro Musun, Quebrada El Jobo, a tributary of Río Paiwas, 12 Feb 1979, *Stevens 12002* (US) **Mexico Oaxaca** Matior Romero, orilla N Río Verde, 6 4 km SE de Aserrado La Floresta sobre camino a arroyo Amaca, 30 Nov 1981, *Wendt el al 3546* (TEX) SOUTH AMERICA **Bolivia** Junction of Rivers Beni and Madre de Dios, Aug 1886, *Rusby 1650* (US) **Brazil** Amazonas, Rio Purus between Santa Maria & Mari north of Lábrea, 22 Jun 1971, *Prance 13452 et al.* (US) **Colombia** Del Valle, Costa del Pacífico, Río Cajambre Silva, 13 May 1944, *Cuatrecasas 17549* (US) **Ecuador** Pastaza, Río Curiacu, ca 8 km W of Puerto Sarayacu, 19 Oct 1974, *Lugo S. 4270* (US) **French Guiana** Route de Paul Isnard, PK 80 environ près d'une crique, 7 Nov 1982, *Fournet 298* (US) **Guyana** Barima-Waini Region Barima River capitulum, 3 mi W Eclipse Falls, W of Arakaka, 5 Aug 1986, *Pipoly 8299* (US) **Paraguay** Mbaracayu Natural Reserve, 2 km N of Jejui-Mi, 12 Jun 1998, *Zardini & Chaparro 48742* (US) **Peru** Loreto, Maynas, Dtto Iquitos, Río Itaya, trocha de Sanangal, 2 Mar 1980, *McDaniel 23290 & Rimachi* (US) **Surinam** Kayser Airstrip, Zuid River 45 km above confluence with Lucie River, 27 Sep 1963, *Irwin 57671 et al.* (US) **Venezuela** Amazonas, Cerro de la Neblina, 14 Feb 1984, *Funk 6194* (US)

Mikania guaco is the most widely distributed and often collected member of the group Holmes (1990) reported the species as occurring as far north as Tampico, Tamaulipas, Mexico It has also been collected at São João da Barra, Rio de Janeiro, Brazil (*Glaziou 9916*, P), which is about 2000 km southeast of its nearest occurrence in the Amazon Basin, and at Caaguazu, Paraguay, about 1100 km south of its nearest location in Bolivia (Holmes 2001)

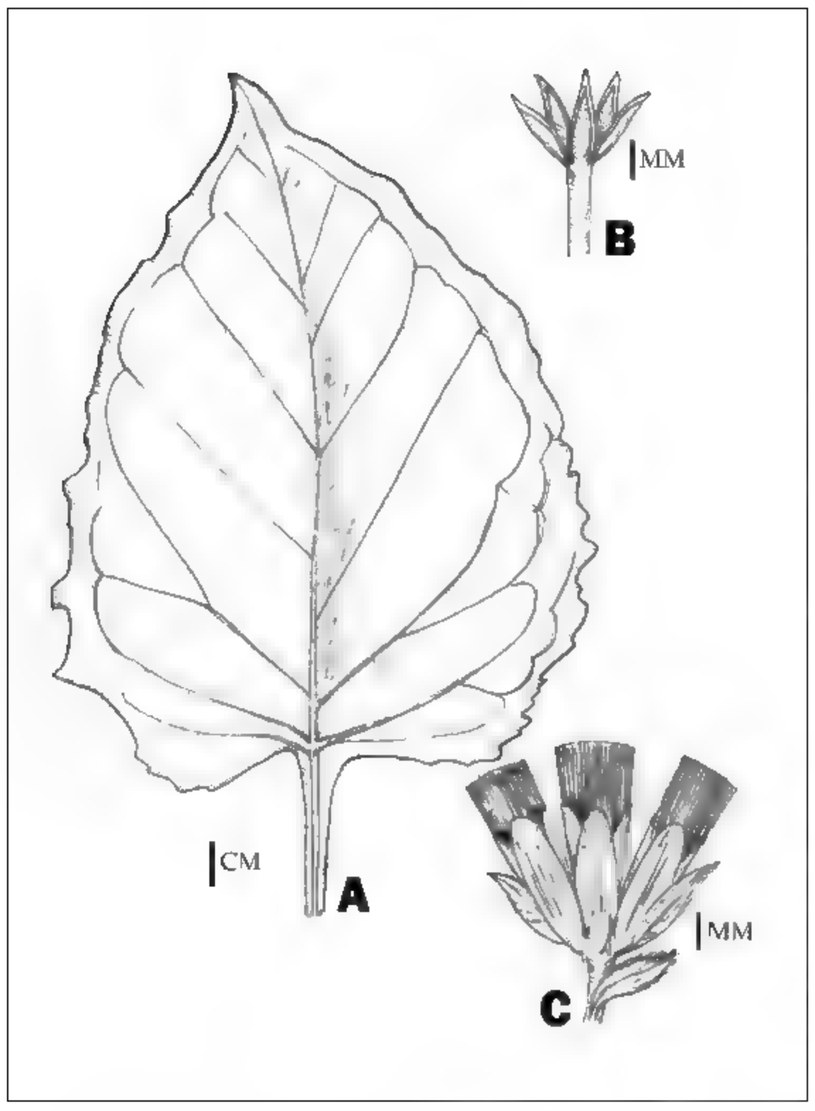
The species is characterized by its ovate to broadly ovate leaves with the bases being cuneately decurrent on the petioles There are, however, numerous specimens where this trait is lacking or less than readily apparent Occasional specimens may have leaves with truncate or even subcordate bases The upper leaf surfaces are normally scabrid, a trait occasionally found in *M. tafallana*, *M. speciosa*, and *M. dictyophylla*

Capitula are not always strictly sessile in this species Occasionally the lateral capitula are rather long pedunculate (up to 5 mm), while the medial capitulum is sessile or occasionally shortly pedunculate The subinvolucral bracts of the outer pair of capitula are always borne at the very base of the involucre, while those of the medial capitulum are several mm below the involucre, or point of origin of the peduncles (if present) of the lateral capitula All are small as compared to the size of the phyllaries

Mikania guaco is similar to *M. speciosa* in overall appearance, but that species is distinguished by its corolla teeth being much greater in length than the throat. Refer to *M. dictyophylla* and *M. tafallana* for comparison with other similar species.

Mikania zonensis of Panama was reduced to a synonym of *M. guaco* by Robinson and Holmes (2008). The type consists of fertile fragments of *M. guaco* (hence the selection of these fragments as lectotype) and leaves that appear to be from *M. leiostachya* Benth. or some species of non-Asteraceae. *Mikania attenuata* DC., long considered as a synonym of *M. guaco*, is now considered to be a synonym of *M. speciosa*.

6. **MIKANIA HENSOLDIANA** I. Sánchez & M.O. Dillon, Arnaldoa 7: 7. 2000. **TYPE**: **Peru**. Piura. Prov. Huancabamba, ca. 3 km N of Canchaque, ca. 1730 m, 22 Jul 1991, *Dillon & Sánchez V. 6322* (holotype: F; isotypes: BAYLU!, US!). Figure 10.

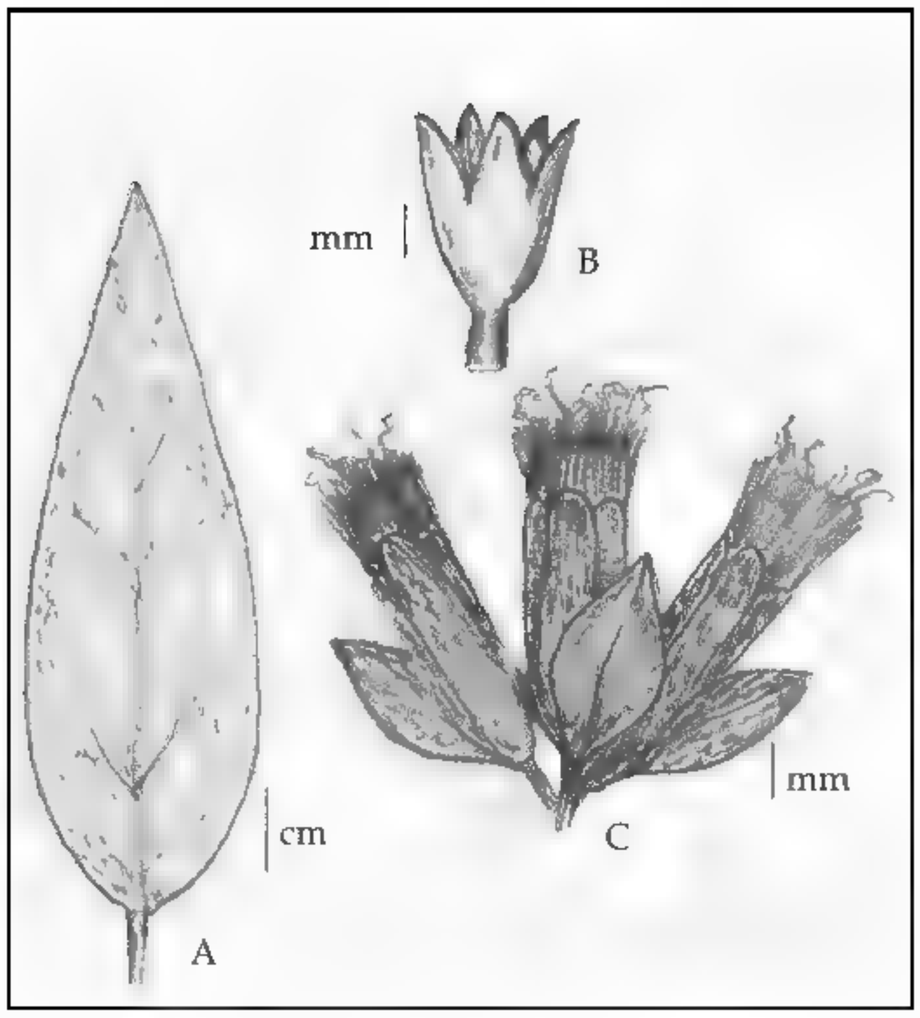


Stems striate-costate, villous to tomentose, particularly above, internodes 6 16 cm long. Leaves broadly ovate to ovate-deltate, 12 20 × 6 13 cm, apices acute to short acuminate, margins coarsely serrate-dentate, bases cuneately decurrent upon the petiole from a rounded to truncate to subcordate contour, pinnately nerved with two pairs of nerves originating within the basal 2 cm of the blade proper, upper surfaces glabrate to puberulent, lower surfaces villous; petioles 2 5.5 cm long, villous; interpetiolar discs lacking. Capitulescense corymbiform, 3 6 × 6 16 cm, capitula disposed in sessile clusters of threes. Capitula ca. 14 mm long; subinvolucral bracts elliptic-lanceolate to oblanceolate-spatulate, 7 9 mm long, apices acute to acuminate, margins long ciliate, bases attenuate, abaxial surfaces villous, adaxial surfaces glabrate, those of the lateral capitula borne at the very base of the phyllaries, those of the medial capitula borne about midway down the peduncle. Phyllaries oblong, 9 10.5 mm long, apices rounded to obtuse, villous, glandular, surfaces of the outer pair villous, glandular, surfaces of the inner pair sparingly pilose-villous. Corollas white, ca. 6.5 mm long, tubes ca. 3 mm long, throats very short (0.2 0.3 mm) and appearing lacking, teeth linear-lanceolate, ca. 3.2 mm long, the veins borne inward and parallel to the margins (more noticeable in the upper half), thus giving the appearance of being double nerved. Pappus bristles white, ca. 60, 7 7.5 mm long, margins scabrid. Cypselae ca. 6 mm long, olivaceous, surfaces glabrate to pilose, slightly glandular at the summit.

Distribution. Known only from the type collected in Piura, Peru; ca. 1730 m; flowering in July.

Mikania hensoldiana is characterized by its linear-lanceolate corolla teeth that are very deeply cut into the throat, which appears lacking. The leaf bases, which are conspicuously decurrent upon the petioles, resemble those of *M. dictyophylla, M. guaco, M. speciosa*, and *M. tafallana*, all of which occur in Peru and or Ecuador. The apparent lack of a corolla throat distnguishes *M. hensoldiana* from these species, all of which have ample corolla throats.

7 **MIKANIA HOLMESIANA** Pruski, Phytoneuron 2012-32 9-13 **TYPE Peru** Amazonas, Bagua, Dtto Imaza Quebrada Almendra, Cerro Tayu, 5°15' 56" S, 78°22' 07" W, 1200 m, 20 Jul 2004, *Rojas, Vasquez, & Apanu 3165* (holotype MO!, isotypes BAYLU!, USM) Figure 11



Stems subterete, densely crisped pubescent to densely villous Leaves laceolate to lanceolate-ovate, lanceolate-ovate, 2 5–6 3 × 1 3–2 9 cm, apices acute, margins entire, bases cuneate to obtuse, surfaces brownish crisped-pubescent, venation pinnate with 2 pairs of nerves originating within the basal 1 5 cm of the base, these arching forward to midblade or beyond, petioles 0 3–1 3 cm long, densely crisped pubescent to densely villous Capitulescence 5–9 × 8–10 cm, branchlets densely crisped pubescent to densely villous, capitula 7–8 mm tall, sessile to subsessile Subinvolural bracts spatulate to oblong, 3–5 × 1–1 8 mm , ca one-half the length of the involucres, densely crisped pubescent to densely villous Phyllaries lanceolate, 4–5 mm long, surfaces of the outer pair crisped pubescent to villous, the inner more or less grabrate except for the crisped puberulent apices, apices obtuse to rounded Corollas white, 3 4–3 9 mm long, throat campanulate, 1 2–1 5 mm, teeth lanceolate ovate, 1 1–1 2 mm, tube Pappus bristles pale brown, 3 5–4 5 mm long, 55–60, margins scabrid Cypselae 4–5 mm long

Distribution. Known only from Cerro Tayu, an isolated sandstone mountain in Dpto Amazonas in northern Peru, elevation 900–1200 m, flowering [June?] July

Representative specimens Peru. Amazonas Bagua Dtto Imaza Tayu Mujaji, Comunidad de Wawas, 900 m, 23 Oct 1997, *Vásquez, Awanash, & Pitug 24677* (MO), Tayu Mujaji, bosque primario, 900–1030 m, 17 Feb 2002, *Vásquez 27609* (MO)

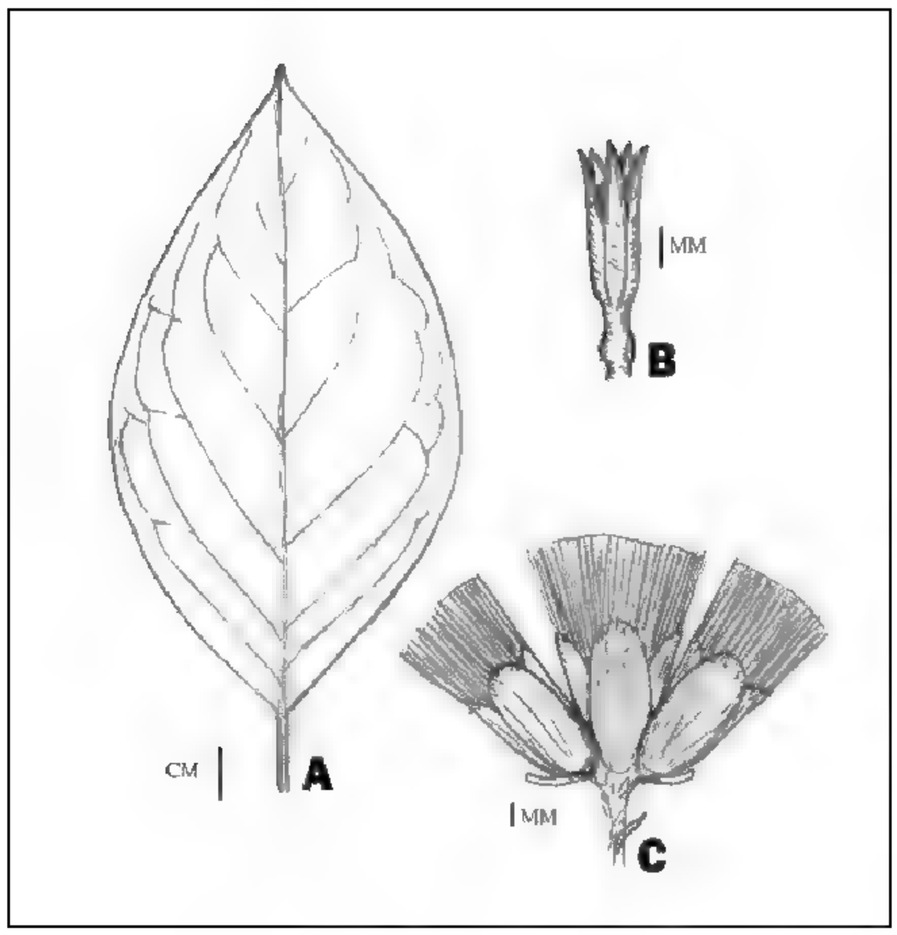
Mikania holmesiana is similar to the well known and widely distributed *M. parviflora*, but is distinguished by its densely crisped pubescent to villous surfaces and corolla teeth that are about the same lenth as the tube proper *Mikania parviflora* has a fine pubescence and corolla teeth that are much shorter than the teeth.

The species was first recognized by my good botanical friend, John Pruski, who named it in my honor

8 **MIKANIA ISERNIANA** Cuatrec., Anal. Univ. Madrid 4: 235. 1935. **TYPE: Ecuador** Guayaquil, 1864, *Isern 94* (holotype MA, isotype F! photo US!) Figure 12

Mikania platylepis D. Don ex King & Rob., Phytologia 58: 263. 1985. **TYPE Peru** without definite locality, *Ruiz & Pavon s.n.* (holotype BM!, photo US!)

Stems glabrous, terete-striate to irregularly angled, younger parts puberulent, internodes to 15 cm long Leaves ovate-lanceolate to rotund, blades 6 5–10 × 2 5–6 3 cm, apices acuminate, margins entire, bases obtuse to cuneate-decurrent on petiole, upper surfaces scrabridulous, lower surfaces hispidulous, densely glandular-punctate, venation pinnate, with 3–4 pairs of nerves rather evenly disposed over the blade, petioles 1 3–1 5 cm long, densely hispidulous Bracteal leaves ca 4 5 × 2 3



cm, elliptic-ovate, otherwise similar to cauline leaves. Capitulescence 8–13 cm wide and ca. 4.7 cm tall; primary peduncle 2.8–9 cm long, hispidulous. Capitula ca. 11 mm long. Subinvolucral bracts subulate, 1–1.5 mm long, disposed at the very base of the involucre on lateral capitula but borne well down the peduncle on the median capitulum. Phyllaries oblong, 6–7 mm long, ca. 3 mm wide; apices widely rounded to subtruncate, hispidulous; the outer pair disposed laterally, the inner adaxial and abaxial (thus the subinvolucral bract is borne opposite the outermost inner phyllary. Corollas ca. 6 mm long, tube 1–1.3 mm, throat 2–2.3 mm long, teeth lanceolate, 2–2.2 mm long. Pappus bristles ca. 55, 6–6.5 mm long, margins scabrid, rufescent (in age). Cypselae ca. 5 mm long, sparingly glandular pubescent.

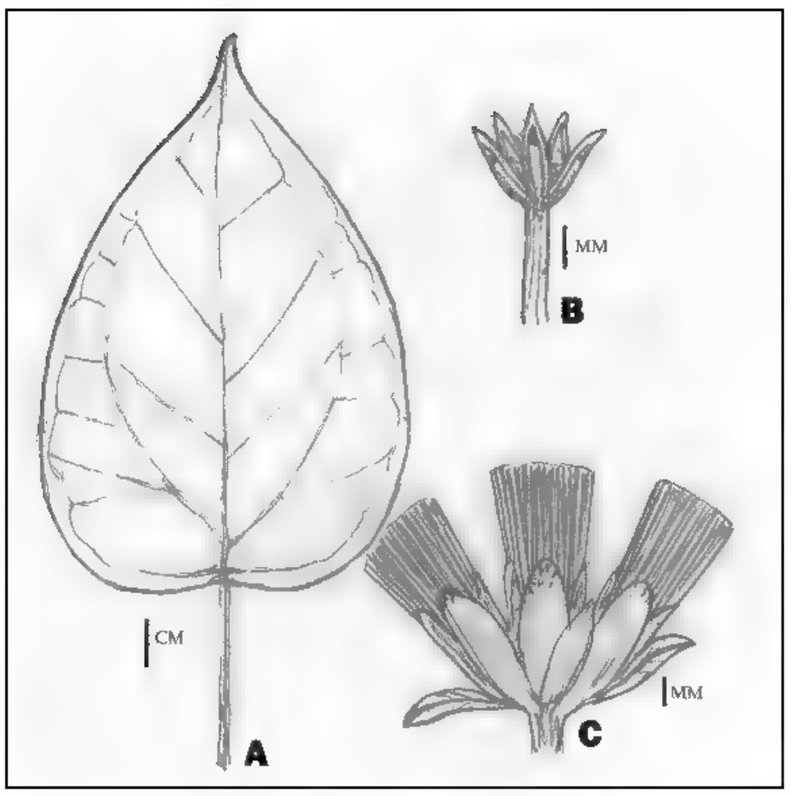
Distribution and phenology. Ecuador and Peru; flowering period unknown.

Representative specimens. Known only from the two type specimens cited above.

Mikania iserniana is well marked by its very broad phyllaries. The rufescent nature of the pappus bristles seems caused by age and or some treatment during pressing and drying the plants.

9. **MIKANIA LATIFOLIA** J.E. Smith *in* Rees, Cycl. 23, *Mikania* N. 8. 1819. *Willoughbya latifolia* (Smith) Kuntze, Revis. Gen. Pl. 1: 372. 1891. **TYPE: St. Lucia**. collector not indicated (holotype: LINN). Figure 13.

Mikania latifolia J.E. Smith forma *dominicensis* Urb., Symb. Antill. 5: 223. 1907. *Mikania latifolia* J.E. Smith var. *dominicensis* (Urb.) Domin, Acta. Bot. Bohem. 9: 68. 1930. **LECTOTYPE** (Stehlé, Not. Syst. 15: 71. 1954): **Dominica**. *Eggers 998* (C, teste Urban, Symb. Antill. 1:44. 1898).

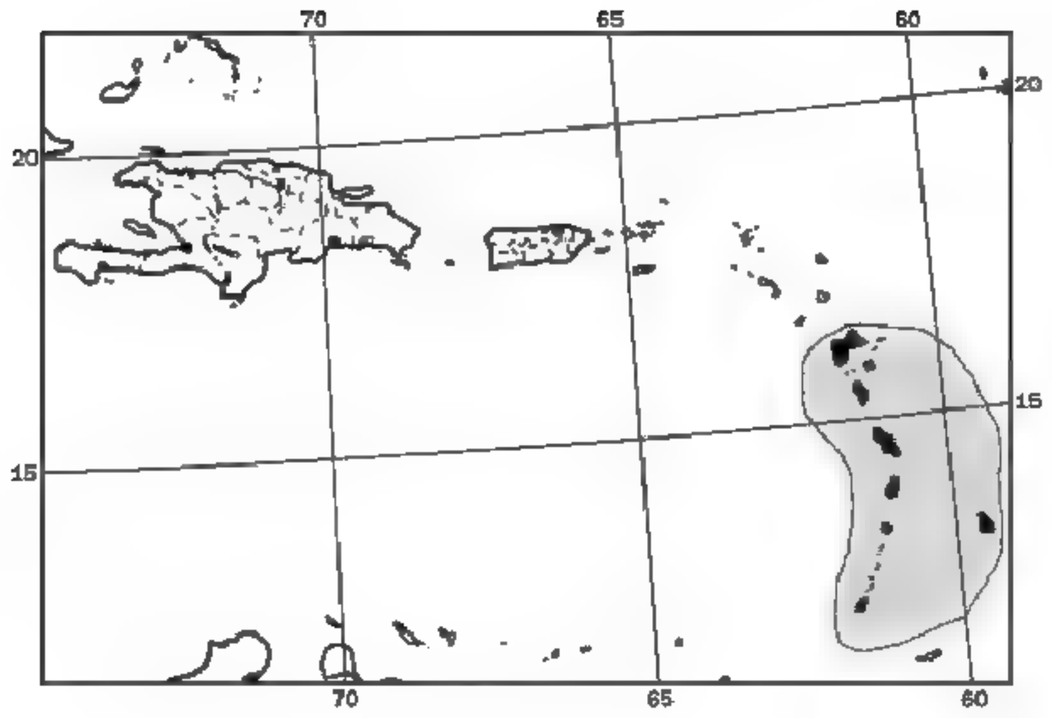


Stems terete to subhexagonal, glabrous; internodes to 31 cm or more long. Leaves broadly ovate to rotund, 3–14 × 2–10 cm, subcordate to shallowly cordate, apices acute to acuminate, margins entire; subpinnately 5-nerved from near the base, upper surface glabrous, veinlets obscure, lower surface glabrate to sparingly puberulent, especially on nerves, reticulate; petioles 0.5–3 cm long, glabrous. Capitulescence ca. 7 × 5 cm, capitula sessile or the lateral occasionally borne on peduncles 1–3 mm long; branchlets terete to angled, puberulent, glandular; bracteal leaves similar to cauline leaves, much reduced in size, puberulent. Capitula 10–13 mm long; subinvolucral bracts oblanceolate to elliptic, 3–5 mm long, puberulent, apices acute to obtuse, borne at the very base of the phyllaries. Phyllaries lance-elliptic to elliptic-ovate, 5–7.5 mm long, nervate; apicesnarrowed to a rounded tip, densely pilose, the outer puberulent, glandular, the inner glabrate. Corollas 4.5–6 mm long, tubes 2–3.5 mm long, throat very short (usually ca. 0.5 mm), teeth lance-linear; 2.3–2.5 mm long, often glandular, nerves borne inward,

but parallel to the margins Pappus bristles 48 50, 6–7 mm long, margins scabrid Cypselae 3 5 4 mm long, glabrate, lightly glandular

Distribution and phenology The Lesser Antilles from Montserrat south to St Vincent and Barbados, to about 800 m, flowering November January, occasionally at other times Figure 14

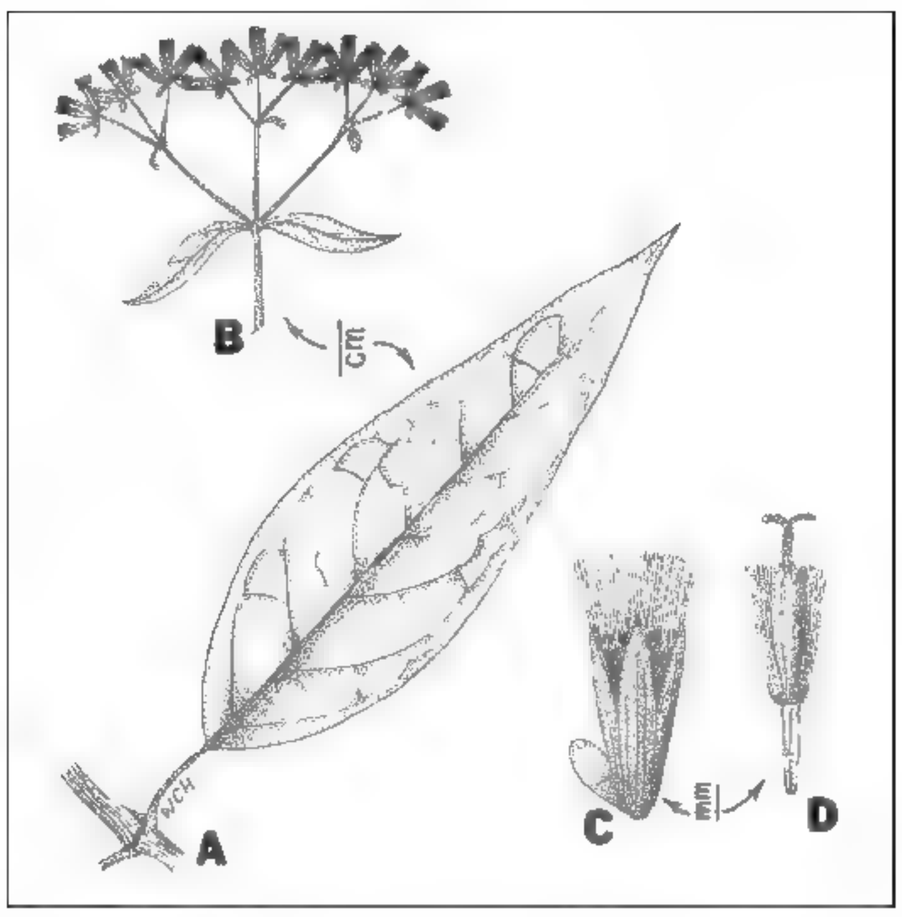
Representative specimens **Barbados** Foster Hall wood, Jan 1890, *Eggers 7116* (US) **Dominica** Near the Fresh Water Lake on southeast side of Morne Micotrin and along old road on side of the mountain 1 1 2 miles E of Laudat, 13 Jan 1966, *Chambers 2568* (US) **Guadeloupe**, 1892, *Duss 2501* (US) **St. Lucia** Barre de l'Isle trail to Mt LaComb, 24 Jan 1985, *Howard 19862 et al.* (US)



The species is characterized by its broadly ovate to rotund leaves with subcordate to shallowly cordate bases The venation of some specimens is very near to being trinervate or palmate *Mikania trinitaria*, which also occurs in the Lesser Antilles, may be distinguished by its narrower leaves with rounded to more often shortly acuminate bases

There are no discernable differences to support recognition of the names *Mikania latifolia* f *dominicensis* or *M. latifolia* var *dominicensis*

10 **MIKANIA NEEI** W C Holmes, Phytologia 58 165 1985 **TYPE: Mexico Veracruz** Mpio Catemaco, E side of entrance of Laguna de Sontecomapan into the Gulf of Mexico, 7 km NE of Sontecomapan, 1 Nov 1981, *Nee 22565* (TEX) Figure 15

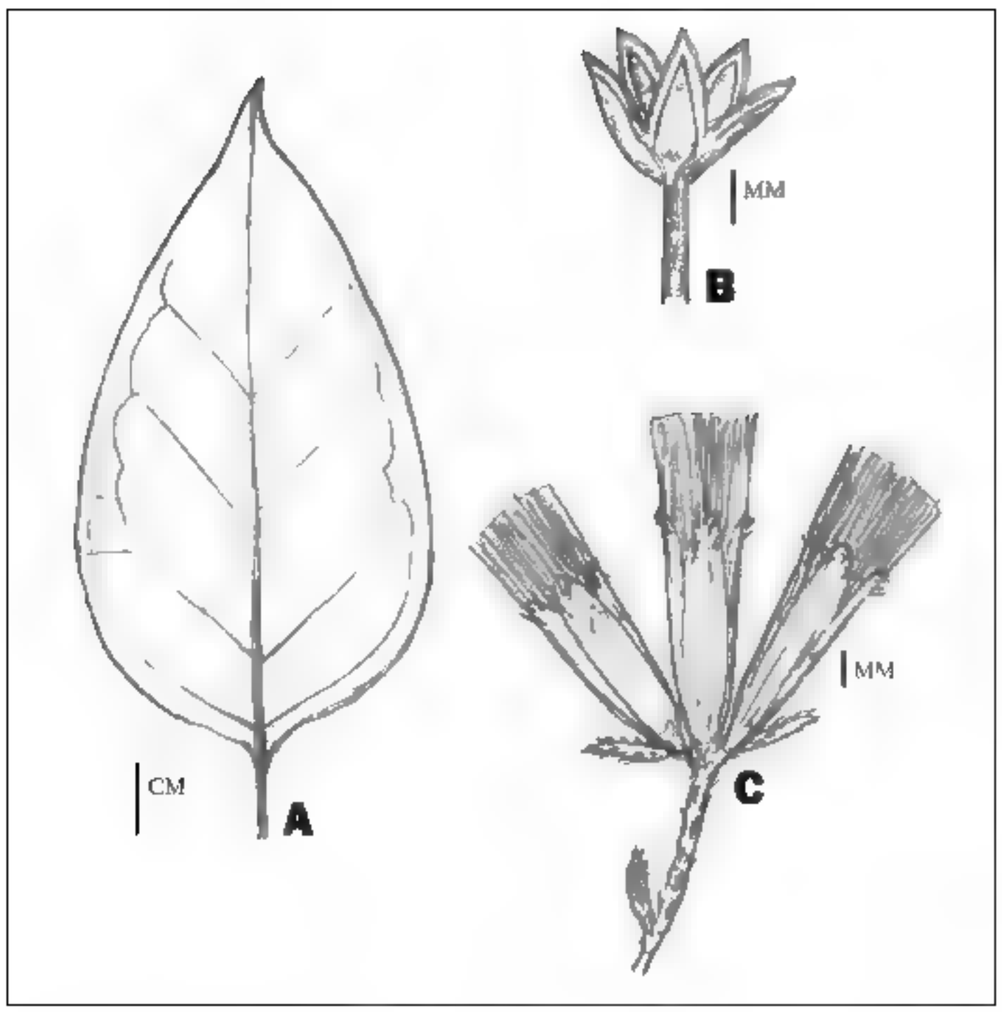


Stems terete, striate, glabrous, internodes 8 cm or more long Leaves lance-ovate, to 12 × 4 cm, pinnately nerved with about 7 pairs of secondary nerves, these exserted from the surface, of about equal prominence and uniformly distributed along the entire length of the blade, upper surfaces glabrous, lower surfaces puberulent, apices acuminate, margins entire, based obtuse to rounded, petioles ca 1 8 mm long, puberulent Capitulescence corymbiform, 4–4 5 × 8 9 cm, branchlets puberulent, bracts similar to leaves but reduced in size Capitula ca 8 mm long, subinvolucral bracts oblanceolate to obovate, 3 4 5 mm long, puberulent, apices rounded to acute Phyllaries elliptic-oblong, 3 5(7) nerved, apices acute to sub- acuminate to a rounded and puberulent tip, the outer pair of phyllaries puberulent, the inner pair glabrate Corollas ca 4 5 mm long, tubes ca 1 4 mm long, throats subcylindric, ca 2 mm long, teeth triangular, ca 1 × 0 5 mm Pappus bristles 40 45, ca 4 5 mm long, margins scabrid Cypselae (immature) ca 2 mm long

Distribution and phenology Known only from the type collected in Veracruz, Mexico, 0–50 m elevation, flowering in November

Mikania neei is characterized by its lance-ovate leaves with pinnate venation with the secondary nerves uniformly disposed over the entire length of the blade The corolla, with its subcylindric throat and short teeth, indicates near relationship with *M guaco* and *M parviflora* Those species have much broader leaves with the secondary nerves originating within the basal fourth of the blade *Mikania guaco* also has scabrid upper leaf surfaces and cuneate-decurrent leaf bases, both traits not occuring in *M neei* The subinvolucral bracts of *M parviflora* and *M neei* have some similarity in shape and size, but those of former species are generally more spatulate , appearing "petiolate" while those of the latter species are oblanceolate to obovate and sessile

11 **MIKANIA OOPETALA** Urban & Niedenzu, Symb Antill 2 461 1901 **TYPE Cuba** Orientali, 1856-7, *Wright 301* (holotype B, destroyed, isotypes BR!, F!, MO!, NY!, PH!) Figure 16



Stems hexagonal, glabrate, the angles winged, internodes to 17 cm or more long Leaves ovate to elliptic-ovate, 6–20 × 4–13 cm, pinnately nerved, apices acute-acuminate, margins entire, bases rounded to an acumination, upper surfaces glabrous, the veinlets inserted in the surfaces, lower surfaces puberulent, glandular, veins exserted form the surface, petioles to 2 cm long, puberulent, winged Capitulescence ca 8 × 8 cm, branchlets angular-flattened, puberulent, bracts similar to leaves but reduced in size Capitula ca 10 mm long Subinvolucral bracts linear, 3–4 mm flower, long, pilose to puberulent, those of the lateral capitula borne at the very base of the involucre, those of the medial capitulum borne about 5 mm below the involucre Phyllaries elliptic-oblong, ca 8 mm long, the outer somewhat densely puberulent to pilose, lightly glandular, nervate, apices rounded, densely pilose, the inner glabrate except for the pilose rounded apices Corollas 5–5 mm long, tubes 2–5–3 mm long, throats broadly campanulate, 0–5–0–7 mm long, teeth ovate, 1–3–1–5 mm long, glandular at the apex, the nerves borne well inward but parallel to the margins Pappus bristles 60–70, ca 6 mm long margins scabrid Cypselae ca 4–5 mm long, olivaceous, glandular

Distribution and phenology Endemic to Cuba, to ca 200 m elevation, flowering December to April Cited in Jamaica (followed by ?) in King and Robinson (1987), but no specimens seen from that island

Representative specimen **Cuba** Cienfuegos Limones, Soledad, near Cienfuegos, 26 Jan 1903, *Pringle 102* (F, GH, MO, US) Additional specimens cited in Holmes (1993)

This species has similarities with both *Mikania latifolia* and *M trinitaria* From the former, which has subcordate to shallowly cordate leaf bases, it is distinguished by its leaves with more cuneate bases The glabrous, hexagonal stems with narrow wings are unusual, a condition shared with

the latter species Characters given in the key adequate distinguish the two species and further discussion is presented under that species

The corolla has deeply cleft teeth and a broadly campanulate throat The veins of the teeth are more noticeably inward from the margins than any other species of the complex Authorship of the name follows King and Robinson (1987)

12 **MIKANIA PARVIFLORA** (Aubl) H Karst , Deutsche Fl 1061 1880-1883 *Eupatorium parviflorum* Aubl , Pl Guian 2 797, t 315 1775 *Eupatorium vincaefolium* Lam , Encycl 2 410 1786 (nom nov for *Eupatorium parviflorum* Aubl) *Willoughbya parviflora* (Aubl) Kuntze, Revis Gen Pl 1 372 1891 **TYPE French Guiana** Cayenne, *Aublet s.n* (holotype P?, isotype BM!) Figure 17

Eupatorium amarum Vahl , Symb 3 93 1794 *Mikania amara* (Vahl) Willd , Sp Pl 3 1744 1803 **TYPE Surinam** *Rolander s.n.* (holotype ?)

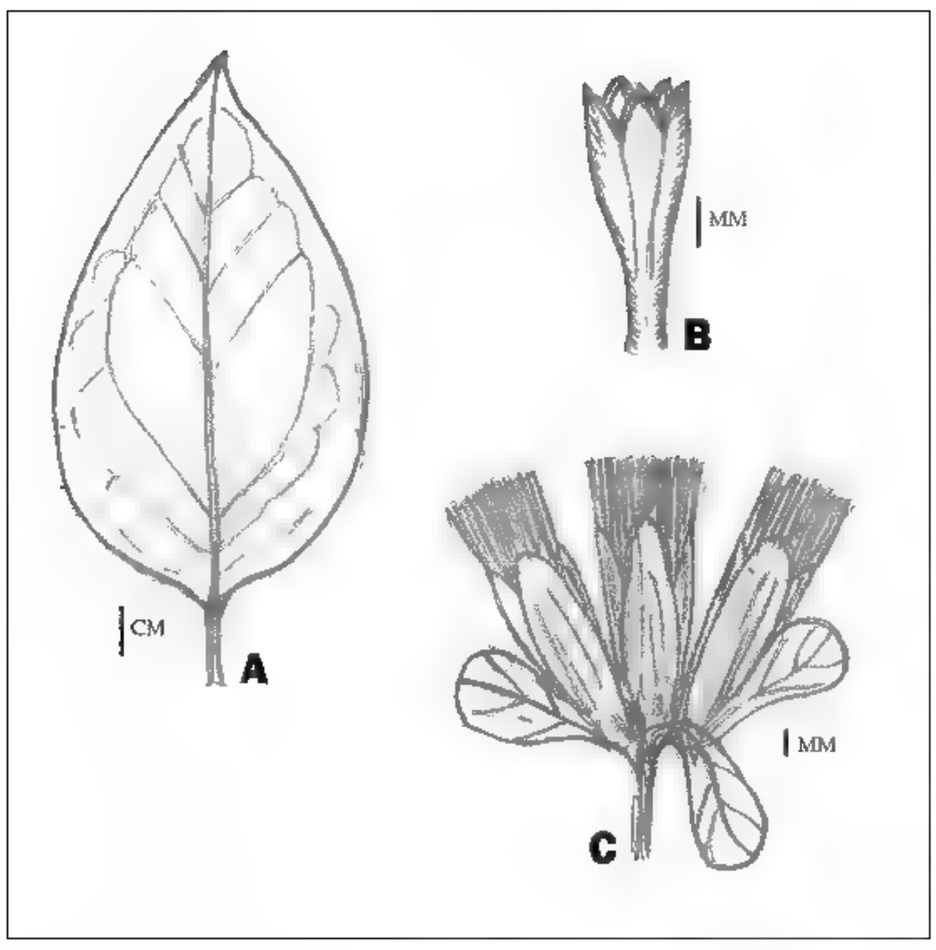
Mikania divaricata Poepp , Nov Gen Sp Pl 3 53 1845 *Willoughbya divaricata* (Poepp) Kuntze, Revis Gen Pl 1 372 1891 **TYPE Brazil** Prov Alto Amazonas in marginibus sylvarum ad Ega, *Poeppig 2906* (holotype B?)

Mikania stipitata Schultz-Bip ex Miq , Stirp Surinam Select 191 1851 **TYPE Surinam** *Hostman & Kappler 602* (holotype U, isotypes G-DC [Macbride neg 16452], NY, P! [Macbride neg 37526])

Mikania cornifolia G Don ex Baker, Fl Bras 6(2) 237 1876 [nom nud in syn]

Mikania loretensis B L Rob , Contr Gray Herb 64 15 1922 **TYPE Peru** Loreto, Maynas, Iquitos, *Ule 6238* (holotype K, isotype B (destroyed) [Macbride neg 16452], GH!, photo & fragm)

Mikania brooksii W C Holmes & McDaniel, Phytologia 41 193 1979 **TYPE Peru** Loreto, Prov Maynas, Dtto Iquitos, Río Momón, Santa Rosa, 3 Jan 1978, *McDaniel, Rimachi, & Brooks 21387* (holotype IBE!)



Stems brown, terete, finely puberulent, smaller stems solid, pithy, the larger often fistulose, internodes to 20 cm or more Leaves ovate, elliptic ovate, to oblong ovate, 6 15 × 3 11 cm, margins entire, apices acute to short acuminate, bases rounded to obtuse, texture somewhat chartaceous-coriaceous, upper surfaces glabrate to lightly puberulent, pinnate with 2 pairs of prominent nerves originating within the basal fifth of the blade, these arching forward and subparallel to the margins, upper surfaces glabrate to sparcely puberulous, prominently reticulate, lower surfaces prominently reticulate, finely puberulent, often glandular, petioles 0 5 2 cm, puberulent to pilose Capitulescence ca 10 cm in diameter, branchlets terete to irregularly angled Capitula sessile to shortly pedunculate, 10 mm long, subinvolucral bracts spatulate-elliptic to obovate, somewhat "petiolate," 3 4 mm long, apices acute to rounded, bases cuneate, upper surfaces glabrate, lower surfaces puberulent, those of lateral capitula borne at the base of the phyllaries, those of medial capitula borne at the base of the involucre in sessile capitula but at the base of the peduncle in pedunculate capitula Phyllaries oblong, 6 8 mm long, apices rounded to acutish, puberulent, the outer puberulent and slightly glandular, the inner glabrate Corollas 4 4 5 mm long, white to lilac in color, tubes 1 5 1 8 mm long, throat cylindric to narrowly campanulate, 2 2 2 5 mm

long, teeth deltate, ca. 0.3 mm long, glandular. Pappus bristles white, ca. 50, 4–5 mm long, margins scabrid. Cypselae ca. 4 mm long, greenish to brownish.

Distribution and phenology. Southern Panama, northern South America to Peru, Bolivia, Brazil, flowering all year; sea level to about 600 m elevation. Figure 18.

Representative specimens. CENTRAL AMERICA. **Panama**. Darien, Capitulumwater of Río Tuquesa, ca. 2 km air distance from Continental Divide in vicinity of Tyler Kittredge, 25 Aug 1974, *Croat 27,63* (US). SOUTH AMERICA. **Bolivia**. Santa Cruz, Velasco Prov. Parque Nacional Noel Kempff Mercado, Arroyo Las Londras, camino el Aserradero El Chore, 22 Jul 1996, *Arroyo 1350* (US). **Brazil**. Mato Grosso [Rondônia], Vida Nova, Porto Velho, Cuiabá-Rondônia, 20 Sep 1962, *Duarte 752* (US). **Colombia**. Chocó, Río San Juan, Quebrada del Taparal, 30 May 1946, *Cuatrecasas 21474* (US). **Ecuador**. Zamora-Chinchipe, Nangaritza Canton, Pachicutza, Camino al Hito, 19 Oct 1991, *Palacios 851 et al.* (US). **French Guiana**. Sommet Tabulaire, 40 km SE de Saül, 27 Aug 1980, *Cremers 6408* (US). **Guyana**. Wami River, Northwest District, 3–18 Apr 1923, *De La Cruz 3827* (US). **Peru**. Loreto, Mishuyacu, near Iquitos, Jan 1930, *Klug 837* (US). **Surinam**. Upper slopes of Juliana Top, 15 km N of Lucie River, 18 Aug 1963, *Irwin et al. 54890* (US). **Venezuela**. Terr. Fed. Amazonas, Solano on Río Casiquiare, 19 km NE of San Carlos de Río Negro, 24 Nov 1977, *Liesner 3824* (US).

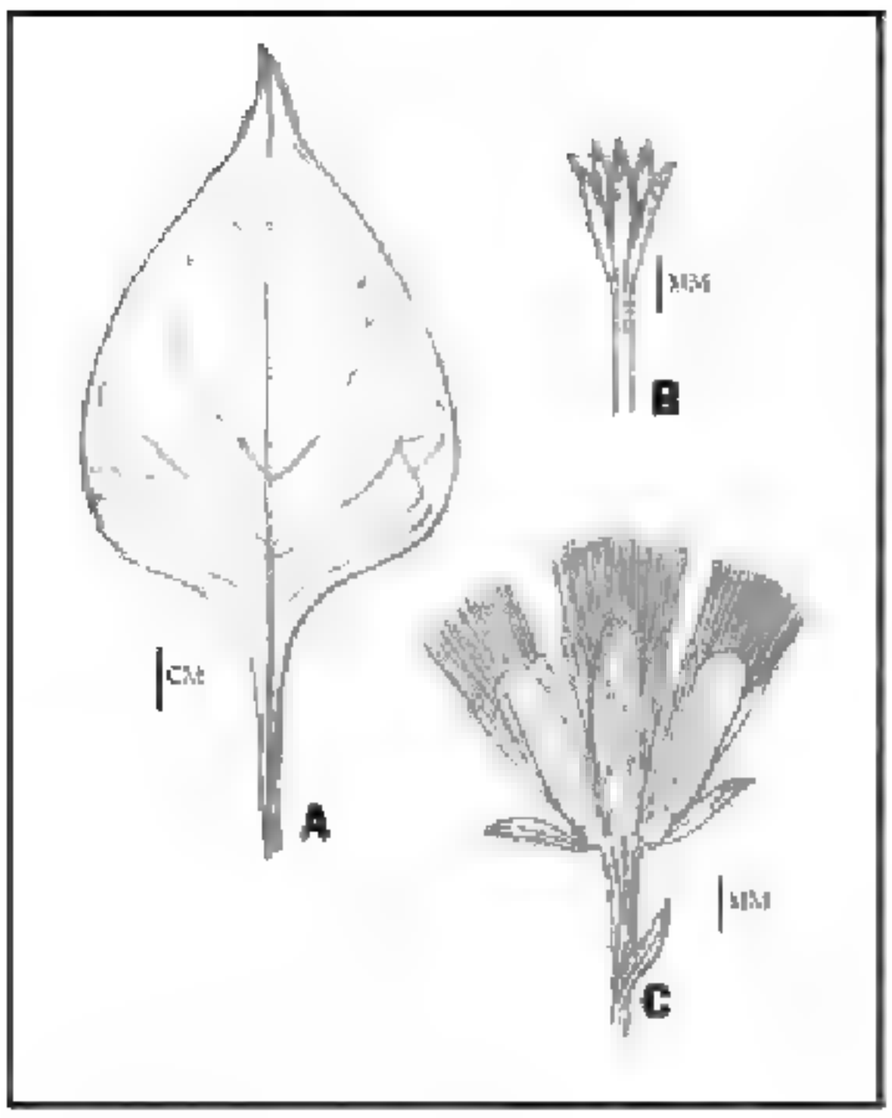
Mikania parviflora is nomenclatorially the oldest name in this complex and was used by Robinson (1922) to refer to the group, hence the current use of the name. However, it is clear that he misapplied the name *M. parviflora* to a species (probably *M. trinitaria*) having corolla teeth greater in length than the length of the throat (see also Robinson 1922). This misapplication of the name has seemingly been followed by and led to errors by Barroso (1959) and others in delineating species of this complex. *Mikania parviflora* is characterized by its ovate, elliptic-ovate, to oblong-ovate leaves with pinnate venation. Two pairs of secondary nerves originate within the basal one-fifth of the blade. The subinvolucral bracts are distinctive in being elliptic-spatulate to obovate with a gradually narrowed base causing the structure to appear petiolate. Corollas are often lilac in color and have very short deltate corolla teeth.

Mikania parviflora is more widespread in distribution than any member of the group other than *M. guaco*.

13. **MIKANIA SPECIOSA** DC., Prodr. 5: 196. 1836. TYPE. **Peru**. *Haenke s.n.* (G-DC'). Figure 19.

Mikania attenuata DC., Prodr. 5: 195. 1836. TYPE. **Peru**. "Montibus Huanacocensis," *Haenke s.n.* (holotype: G-DC').

Wilougbya nieronymi Rusby, Bull. New York Bot. Garden 4: 383. 1907. TYPE. **Bolivia**. Coripati, Yungas, 28 Apr 1894, *Bang 2169* (holotype: NY'; isotypes: GH', MO', US').



Stems terete, glabrate to puberulent, younger stems solid, pithy, the older pithy or more often fistulose; internodes to ca. 16 cm or more. Leaves broadly ovate, 8–15 × 3.5–11 cm, margins entire, apices acute, bases rounded, cuneately decurrent upon petiole at insertion, pinnately nerved with 2–3 pairs of secondary nerves originating within the basal third of the blade, reticulate; upper surfaces generally scabrid, lower surfaces tomentellous, petioles 3–6 cm long, occasionally prominently winged. Capitulescence 3–16 cm or more in diameter and 4–8 cm tall, branchlets irregularly terete, puberulent. Capitula 10–12 mm long, exterior bracts linear-lanceolate, ca. 3 mm long, puberulent, those of lateral capitula borne at the base of the involucre, those of the median capitulum borne ca. 5 mm below the involucre. Phyllaries oblong, 7–8 mm long, apices rounded to obtuse, puberulent, glandular, the outer pair puberulent, glandular, the inner pair glabrate. Corollas 5–6 mm long, purplish, tubes 2.5–3 mm long, throats ca. 0.7 mm long, the teeth oblong, ca. 1.3 mm long, the nerves marginal. Pappus bristles ca. 65, 5–6 mm long, not thickened at the tips, margins scabrid. Cypselae ca. 3.5 mm long, dark grayish or grayish-green, glabrate to puberulent.

Distribution and phenology: Andes Mountains of Bolivia, Peru, and Ecuador, 1200–2400 m elevation, flowering April to August. Figure 20.

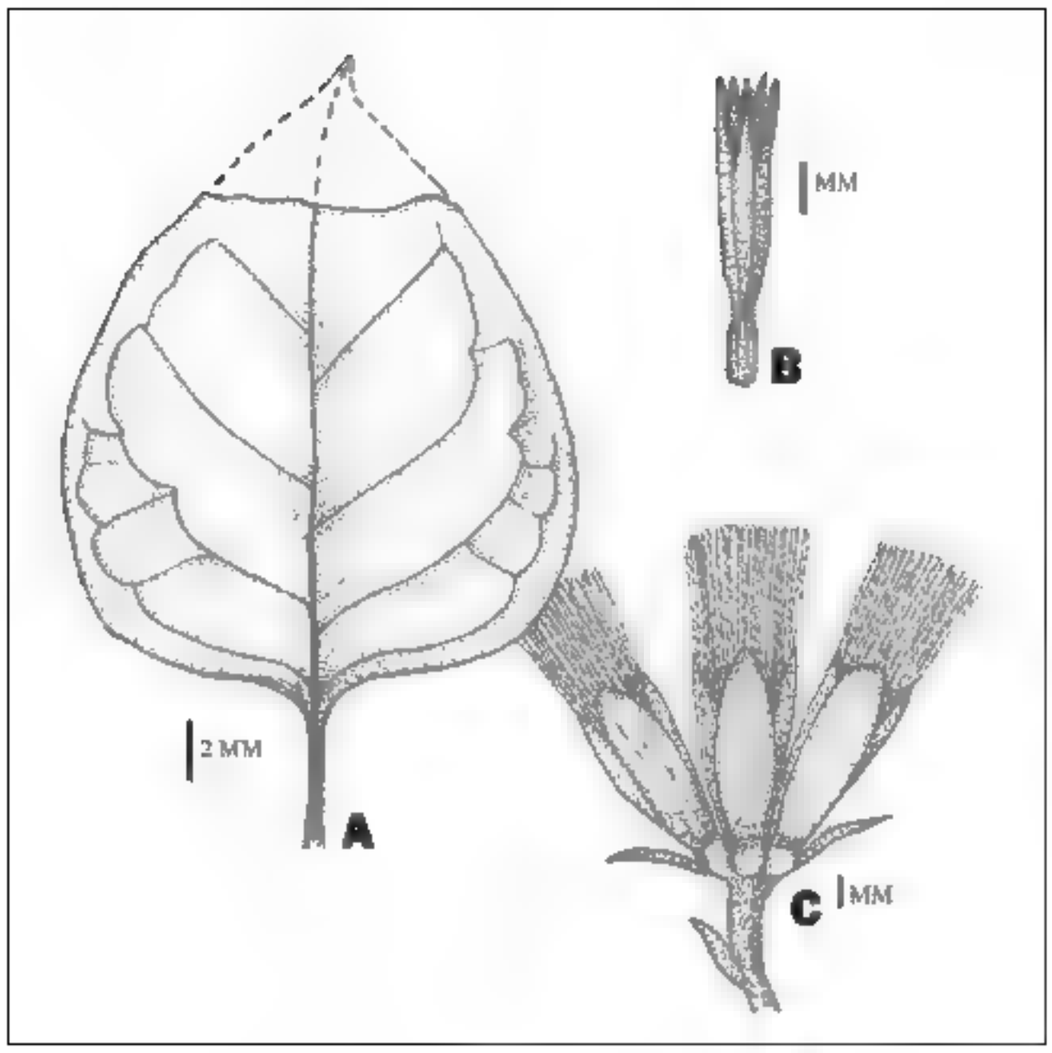
Representative specimens: **Bolivia**. Coripata, Yungas, 28 Apr 1894, *Bang 2169* (US). **Ecuador**. Zamora-Chinchipi, area of ECSP Research Station ca. 30 km away from the city of Loja on highway toward Zamora, 1800 m, 12 Dec 2000, *Matezki 300* (US). **Peru**. Amazonas, Chachapoyas, Quebrada Molina 5 km below Chachapoyas, 5 Jun 1962, *Wurdack 770* (F, US).

Mikania speciosa is very similar to *Mikania guaco* in habit, leaf shape, nature of the bases, and scabrid upper surfaces. It is best distinguished by its corolla teeth which are about 3× the length of the throat.

Mikania attenuata is included as a synonym of *Mikania speciosa*. Until Robinson and Holmes (2007), the name *M. attenuata* has been treated a synonym of *M. guaco*, based upon B. L. Robinson's (1922a) evalulation "*M. attenuata* DC., here doubtfully referred to this species [i.e., *M. guaco*], has been studied chiefly from a photograph of the type-material. From this it appears that the habitual correspondence is close and the original diagnosis fails to show any very significant differences except the smoothness of the leaves, which may in the brevity of the description have been somewhat overstated." Examination of the holotype at G-DC showed that the corolla teeth are

significantly longer than the throat, thus it cannot be *M. guaco*, a species marked by its short corolla teeth. However, neither name (*M. speciosa* or *M. attenuata*), both proposed by de Candolle (1836), has date priority. In order to promote name stability, the name *M. speciosa* was selected for the species (Robinson & Holmes 2008) rather than resurrect the name *M. attenuata*, which has long been buried in the synonymy of *M. guaco*.

14 **MIKANIA TAFALLANA** Kunth, Nov. Gen. Sp. 4: 107. Ed. Folio 1818. *Mikania tafallae* Spreng., Syst. Veg. Fl. Peruv. Chil. 3: 422. 1826. *Willoughbya tafallana* (H.B.K.) Kuntze, Rev. Gen. 1: 373. 1891. **Type: Ecuador.** Ad ripas fluminis Daule prope Guayaquil, *Tafalla s.n.* (holotype: P, isotype: GH!). Figure 21.



Stems terete [to hexagonal?], slightly puberulent to asperous. Leaves broadly elliptic to elliptic-ovate to rotund, to 9.22 × 6.4 cm, apices acute, margins entire, narrowly revolute, bases rounded to an abrupt cuneation at the petioles, venation pinnate, secondary nerves more or less evenly disposed over the length of the blade, upper surfaces asperous, lower surfaces puberulent (particularly the veins), prominently reticulate; petioles ca. 1.2–4 cm long, glabrate. Capitulescence corymbiform, ca. 4–15 cm tall and 7–20 cm wide. Capitula ca. 12 mm long, subinvolucral bracts linear, 2–2.5 mm long, those of the lateral capitula borne at the very base of the phyllaries, those of the medial capitula borne about midway down the peduncle. Phyllaries elliptic-oblong, ca. 7 mm long, surfaces 5 or more nerved, apices rounded, pubescent, the outer pair puberulent, glandular, the inner glabrate to sparingly puberulent. Corollas ca. 7 mm long, tubes 2–2.5 mm, throats cylindric, 3–3.3 mm long, teeth laceolate, ca. 1.3 mm long. Pappus bristles ca. 7 mm long, 60–64, margins scabrid. Cypselae ca. 4 mm long, smooth.

Distribution and phenology. Endemic to the Pacific slopes of western Ecuador, to about 600 m, flowering all year?

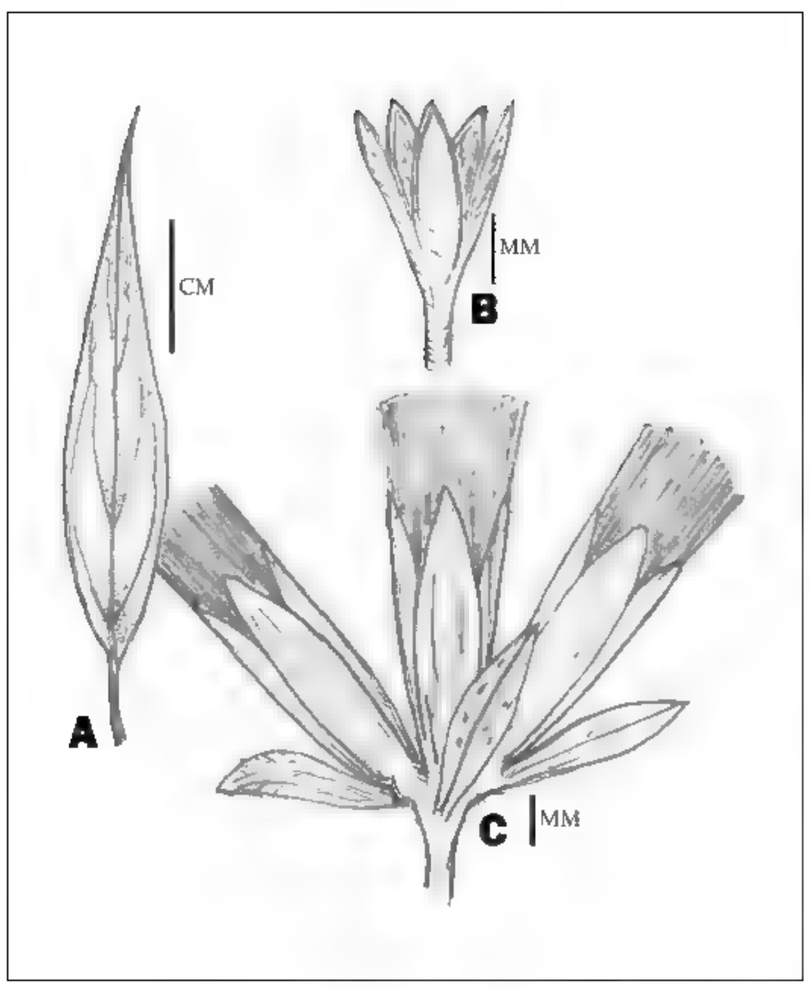
Additional specimens. **Ecuador.** Esmeraldas, Quinindé, Bilsa Biological Station, Montañas de Mache, 35 km W of Quinindé, 5 km W of Santa Isabella, 0° 21' N, 79° 44' W, 400–600 m, 8 Dec 1994, *Pitman & Bass 1054* (MO, US); Manabi, Jama, 28 km S of Pedernales, 3.5 km SW of town of Camarones, 28 Nov 1999, *Delinks 515* (MO).

In his treatment of the *Mikania* of Ecuador, Robinson (1922a) compared *M. tafallana* with "the little understood [at the time] *M. parviflora* of French Guiana." His statement "in *M. parviflora* the [corolla] teeth are longer than the throat," when coupled with the stated distribution (French Guiana), suggests *M. trinitaria* instead, a species with the corolla teeth being longer in length than the throat. *Mikania parviflora* has very short corolla teeth, generally one-fourth or less as long as the throat (see above). The same error is in Robinsons's (1922b) key to the members of the *M. parviflora* group. More accurately, *M. tafallana* closely resembles the very common and well-known *Mikania*

guaco, especially in leaf characteristics. In particular this includes general leaf shape, the roughened nature of the upper leaf surfaces, and the short cuneation at the leaf bases. Careful observation shows the leaves to be more rotund, have but a short cuneation at the base, and have pinnate venation with the secondary nerves more evenly disposed over the length of the blade. *Mikania guaco* has more ovate-oval leaves, pinnate venation with the secondary nerves originating in a rather congested manner in the basal fourth of the blade, and exceedingly prominent cuneate-decurrent leaf bases. Reliance of these traits for distinguishing the two species would be tentative at best. However, a far more precise character, the nature of the corolla teeth, can be used to effect separation. *Mikania tafallana* has lanceolate corolla teeth that are about one-third to one-half the length of the throat while *M. guaco* has broadly deltate corolla teeth that are about one-fifth or less the length of the throat.

Before treatment by Robinson and Holmes (2008), the species was previously known only from the type material.

15. **MIKANIA TRIMERIA** W.C. Holmes & McDaniel, Phytologia 50: 8. 1981. **TYPE: Colombia.** Amazonas-Vaupes, Río Apaporis, raudal Yayacopi (La Playa) and vicinity, 0° 5' S, 70° 30' W, ca. 800 ft., 15 Apr 1952, *Schultes & I. Cabrera 16221* (holotype: US!). Figure 22.



Stems terete, striate, glabrate; sparsely puberulent at the nodes and on younger parts of the stem; internodes 2.5–5.5 cm long. Leaves verticillate (3 per node), lanceolate-linear, 2.5–4 × 0.4–0.7 cm, pinnately nerved, apices acuminate, margins entire, bases attenuate, upper surfaces glabrate, the major nerves obscurely impressed, lower surfaces densely puberulent, the major nerves exserted from the surface, prominent, veinlets obscured; petioles 3–4 mm long, puberulent. Capitulescence ca. 3.5 cm tall and 4.5 cm in diameter. Capitula 7–9 mm long; subinvolucral bracts elliptic-obovate, 3–4 mm long, puberulent, apices acute; borne at the very base of the involucre in both lateral and medial capitula. Phyllaries lance-ovate to elliptic ovate, 5–6 mm long, the outer sparingly puberulent, striate, apices acute, puberulent, the inner glabrate, striate, the apices obtuse, puberulent. Corollas 4–4.5 mm long, tubes ca. 1.2–1.5 mm, throats funnelform, ca. 1.0 mm long, teeth lanceolate, ca. 2 mm long, sparingly glandular, the summit of the inner surfaces hirsute, veins marginal; bases slightly expanded. Pappus bristles white, 40–45, 5–6 mm long, margins scabrid. Cypselae ca. 2.8 mm long, puberulent.

Distribution and phenology. Known only from the type collection in Colombia; flowering in April.

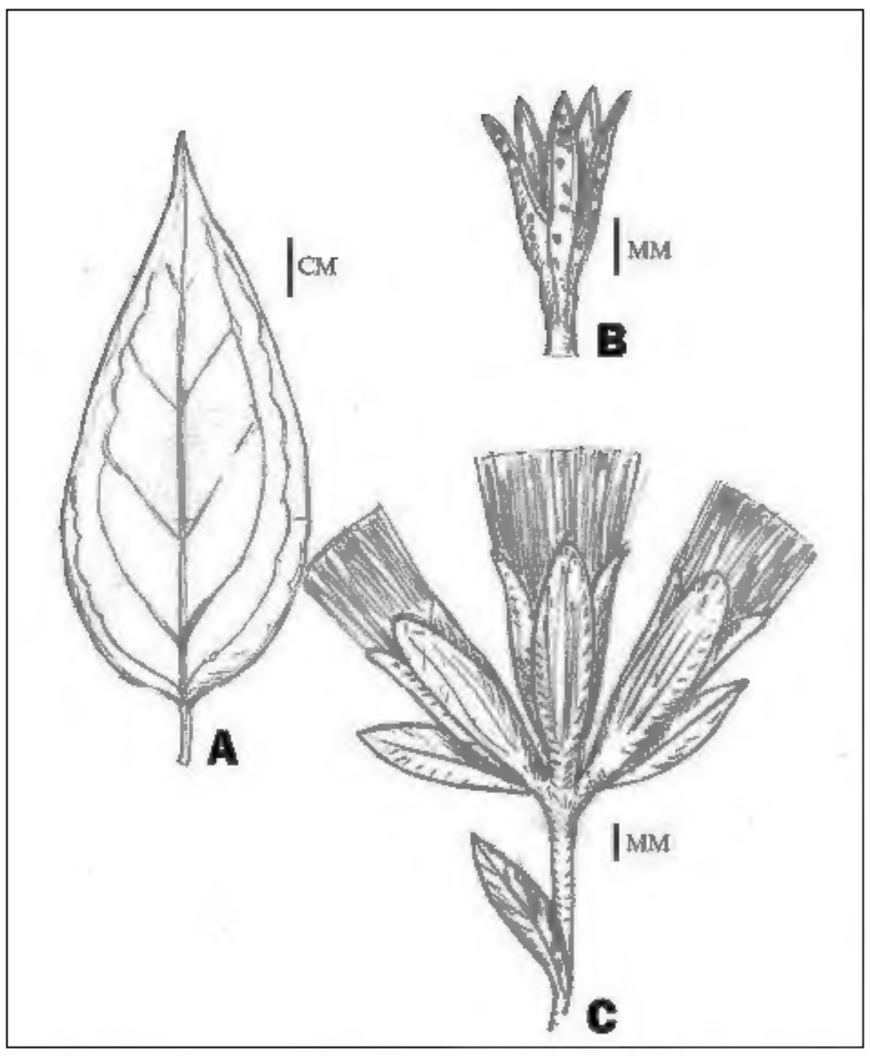
This species is well-marked by its whorled lanceolate-linear leaves. The capitulescence branches trichotomously, which seems to be a continuation of the leaf arrangement, rather than dichotomously as do the other members of the group.

The corollas indicate near affinity with *Mikania trinitaria*, which may be distinguished by its hexagonal stems, corolla teeth with nerves borne inward but parallel to the margins, and opposite, ovate leaves.

16. **MIKANIA TRINITARIA** DC., Prodr. 5: 194. 1836. *Willoughbya trinitaria* (DC.) Kuntze, Revis. Gen. Pl. 1: 373. 1891. **TYPE**: **Trinidad**. *Sieber s.n.* (holotype: G-DC!; isotype: BM!). A presumed isotype at BM is labeled as *Sieber 182*, while the holotype at G-DC is unnumbered. Figure 23.

Mikania santamensis V.M. Badillo, Bol. Soc. Venez. Ci. Nat. 9: 135. 1944. **TYPE**: **Venezuela**. Anzoátegui. Morichal del baño, Río Tigre, 26 Dec 1940, *Pittier 14626* (holotype: VEN!; isotype: F, photo US!).

Mikania capayensis V.M. Badillo, Bol. Soc. Venez. Ci. Nat. 10: 304. 1946. **TYPE**: **Venezuela**. Miranda, Alrededores Capaya, 100-400 m, 3 Apr 1944, *Badillo 441* (holotype: VEN!).



Stems hexagonal, the angles finely winged, the larger glabrate and fistulose, the younger solid, often puberulent; internodes 3–15 cm or more long. Leaves ovate, 5–15 × 3–6 cm, apices acute to acuminate, margins entire, bases rounded to obtuse to occasionally shortly acuminate, pinnately nerved with 2 pairs of more prominent secondary nerves originating within the basal fourth of the blade, upper surfaces glabrous, lower surfaces finely puberulent, glandular; petioles 1–3 cm long, glabrate to puberulent. Capitulescence corymbiform, to ca. 15 cm tall and 15 cm in diameter, dense to open; capitula occasionally borne on peduncles 1–3 mm long. Capitula 10–12 mm long; subinvolucral bracts linear to ovate, 2–4 mm long, the abaxial surfaces puberulent, the adaxial surfaces glabrate; those of the lateral pair of capitula borne at the very base of the involucre, while those of the medial capitula may be borne from the very base of the involucre to the base of the peduncle supporting the cluster of capitula. Phyllaries oblong to elliptic-oblong, apices rounded, puberulent, the outer pair puberulent, glandular, the inner glabrate. Corollas 5–5.5 mm long, glandular, tubes 2–3 mm long, throats campanulate to funnelform, 0.8–1 mm long, teeth lanceolate, ca. 2 mm long, glandular, nerves borne inward but parallel to the margins. Pappus bristles white, ca. 6 mm long, 35–40, margins scabrid. Cypselae ca. 3.5–5 mm long, glandular.

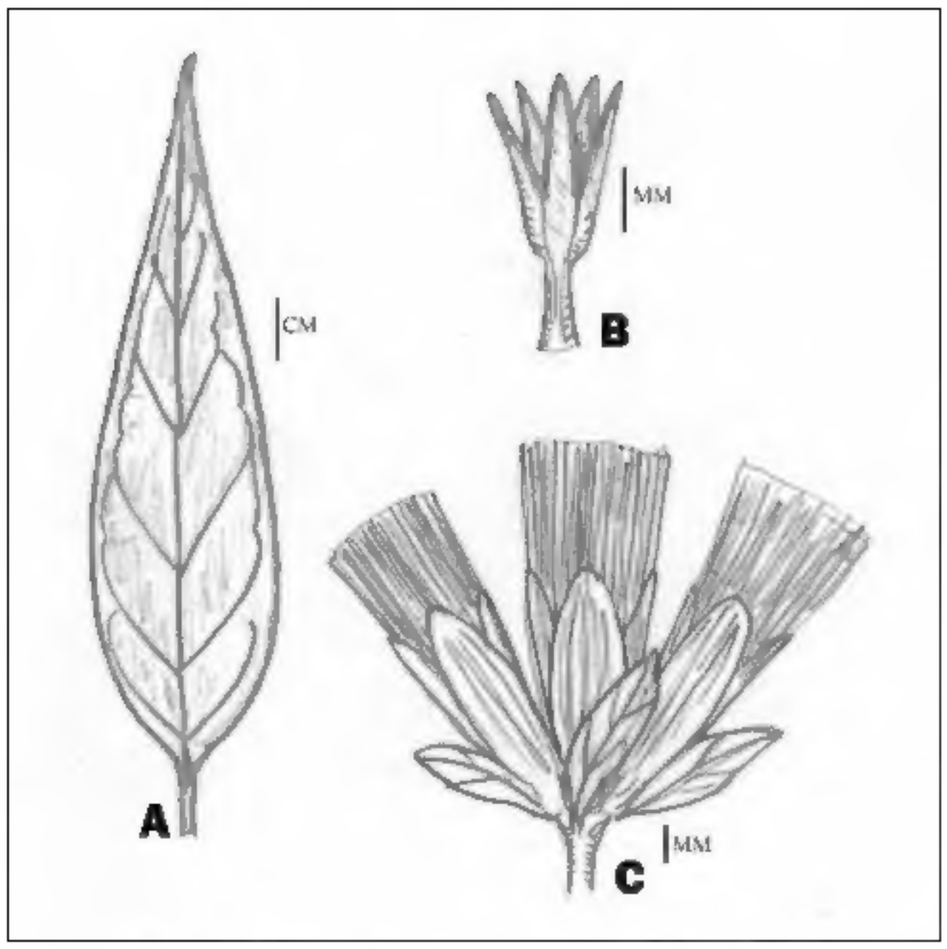
Distribution and phenology. Northern South America from Colombia to the Guianas and Trinidad, Amazonas and Pará, Brazil, also the Lesser Antilles; 50-1700 m; flowering mostly February to March. Figure 24.

Representative specimens. LESSER ANTILLES. **Montserrat**. 12 Feb 1907, *Shafer 518* (US). **St. Vincent**. Calvary, Jan 1890, *Eggers 6819* (US). **Trinidad and Tobago**. Trinidad. Piarco Savann, south of Arouca, 27 Feb 1920, *Britton 111 et al.* (US). SOUTH AMERICA. **Brazil**. Pará, Jarí, margem do Rio Jarí, entre Monte Dourado e São Militão, 28 Apr 1969, *Silva 1939* (US). **Colombia**. Meta. Mpio. La Macarena, Reserva de La Macarena, 20 km NO en la via a Conejos, 7 Aug 1988, *Callejas & Marulanda 6970* (US). **French Guiana**. Plaine de Kaw, crique Angélique, 13

Apr 1984, *Granville 6804* (P, US). **Guyana**. Pomeroon-Supenaam Region, Canal near Red Lock on way to Copoey Lake, 5 Mar 1991, *McDowell 4109 et al.* (US). **Surinam**. Without further location or date, *Coulon 234* (MO). **Venezuela**. Lara, Macuto, *Saer 163* (US).

Mikania trinitaria is characterized by its hexagonal stems and deeply cut corolla teeth with the nerves being borne inward from the margins. The latter condition is not always readily apparent and may result in difficulty in distinguishing *M. trinitaria* from *M. vaupesensis,* which is discussed under that species. *Mikania trinitaria* appears closely related to *M. oopetala* of Cuba, which also exhibits the traits mentioned. However, *M. oopetala* has the corolla teeth even more deeply cut and the throat more broadly expanded. Others differences are cited in the key to species.

17. **MIKANIA VAUPESENSIS** W.C. Holmes & McDaniel, Phytologia 50: 9. 1981. **TYPE**: **Colombia**. Vaupes. Río, near Mitu, 13 Nov 1952, *Schultes & I. Cabrera 18422* (holotype: GH). Figure 25.



Stems terete to somewhat hexagonal, glabrate, striate; internodes to 20 cm or more long. Leaves lanceolate to lance-ovate, 5–26 × 1.8–5.5 cm, apices acuminate, margins entire, bases obtuse to acute to acuminate, pinnately nerved with the secondary nerves rather evenly disposed over the length of the blade, upper surfaces glabrate, lower surfaces puberulent, glandular, veinlets reticulate, prominent; petioles 1–1.8 cm long, glabrate to puberulent. Capitulescence 3.5–10 cm tall and 4–10 cm wide, branchlets puberulent; capitula sessile or nearly sessile. Capitula 9–11 mm long; subinvolucral bracts lance-ovate to ovate to ob-ovate, 3–5.5 mm long, apices acute, adaxial surfaces glabrate, abaxial surfaces puberulent, midvein prominent; those of lateral and medial heads borne at the very base of the involucre. Phyllaries oblong to narrowly ovate, 4–7 mm long, the outer puberuent, apices rounded to obtuse, puberulent, the inner glabrate, apices rounded to obtuse, puberulent. Corollas white to pinkish, ca. 4–4.5 mm long, tubes 1.5–2 mm long, throats campanulate, ca. 0.5–1 mm long, teeth lanceolate, 2–2.5 mm long, the veins marginal; sparingly glandular near the apex. Pappus bristles, white, 50–60, 5–5.5 mm long, margins scabrid. Cypselae light green, ca. 5 mm long.

Distribution and phenology. Amazon-Vaupes region of Colombia; 200-230 m elevation; flowering August-September.

Additional specimen. **Colombia**. Amazonas-Vaupes. Río Apaporís, Raudal Yayacopi (La Playa) and vicinity, 18 Aug 1952, *Schultes & Cabrera 16957* (GH).

This species is characterized by its narrow lanceolate to lance-ovate leaves with acuminate apices and bases. Also, the leaves are distinctly pinnate with the secondary nerves evenly spread over the blade. In many respects, the species is similar to the more widespread *Mikania trinitaria*. That species has secondary nerves that originate within the basal one-fourth of the blade. Corolla teeth of *M. vaupesensis* are longer than the length of the throat, as they are in *M. trinitaria*, but the nerves are

borne at the margins, whereas they are borne inward from the margins in *M. trinitaria*, a trait sometimes difficult to discern in some specimens.

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